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Special Articles

THE USE OF VITAL STATISTICS IN THE PUBLIC HEALTH SERVICE*

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Vital statistics, to be of benefit to the community, must be used with truth, with imagination, and with power. The essential requisites are, first, that the data be accurate and sufficiently complete; second, that the inferences and conclusions drawn follow logically from the facts collected; and, third, that the results be so displayed as to be readily understood and compel attention. If properly used there is no keener weapon at the service of the sanitarian in his fight against the forces of disease than vital statistics, but improperly used they lead to inaction on the one hand or to extravagance on the other hand.

It is of the greatest importance to a nation that accurate records be kept of its vital capital, of its gains by birth and immigration and of its losses by death and emigration, for a nation's true wealth lies not in its lands and waters, not in its forests and mines, not in its flocks and herds, not in its dollars, but in its healthy men and women and in its children. A well man is worth more to a nation than a sick man; a man in the prime of life is of more immediate worth than an old man or a child; a married man is a greater asset to the community than a single man. Hence in a nation's vital bookkeeping the number of people, their age and sex and conjugal condition, their parentage, their health, and the rate of births and deaths, are matters of great moment. Their environment is also important, their concentration in cities and villages and congested areas, their mode of housing, their occupation, their state of intelligence, their knowledge of sanitation, all contribute to the sum total of their usefulness to themselves and to society.

Vital bookkeeping is carried on much as ordinary bookkeeping. There are daily entries of accessions and losses as they occur, corresponding to receipts and payments; there are weekly statements, monthly statements, and annual statements; and at longer intervals there is a taking account of stock, that is, a census. This difference, however, should be noted. Accounts are accurate records of transactions and if properly kept an exact balance will be obtained. Vital statistics are not always accurate. The individual data are incomplete and subject to error. The results, therefore, lack the precision of monetary ac-

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counts. It is necessary to keep this fact constantly in mind when interpreting the results of statistical studies. An understanding of the arithmetic of inexact numbers and of the theory of probability is essential to a health officer who desires to become proficient in this branch of his work.

Among the books that might be profitably consulted for this purpose are Yule's "Introduction to the Theory of Statistics," Bowley's "Elementary Manual of Statistics," Elderton's "Primer of Statistics," and, best of all, perhaps, King's "Elements of Statistical Method."

Vital statistics are useful for many purposes. To the historian they show the nation's growth and mark the flood and ebb of physical life; to the economist they indicate the number and distribution of the producers and consumers of wealth; to the sanitarian they measure the people's health and reflect the hygienic conditions of their environment; to the sociologist they show many things relating to human beings in their relation one with another.

But vital statistics are not to be collected and used as mere records of past years; an even more important use is that of prophesying the future. An engineer in planning a water supply to last for a generation estimates the future population by the previous rate of growth; so, also, in laying out a system of streets, sewers, and transportation service, the engineer must look ahead. The whole idea of city planning is fundamentally based on the use of vital statistics of what has been as a means of estimating what is to be.

The Health Officer of a city, or he whose duty it is to collect and record the vital statistics, should study them as soon as received and not wait until some convenient day when other work is slack, and then merely tabulate and compute averages for formal reports and permanent record. The Health Officer must learn that vital statistics are not collected as a source from which to write history; not as chapters in a book that is closed; but that they are facts upon which future action is to be based; they are the portents of good or evil that is to come. From the cloud no larger than a man's hand it is the Health Officer's business to discern the coming storm.

I once knew a Health Officer who told me that he never looked at the reports of death as handed in by the physicians until the last day of the month, when he made up his report. He said that he had little interest in vital statistics, that they were a nuisance and the necessity of keeping them kept him from attending to more important duties. It is no wonder that he never took any interest in them for he had never really made use of them and did not know what they were for. That there are other Health Officers like him is shown by the fact that many an epidemic has started and attained momentum in a community, and even been described in the daily papers before the Health Officer realized that the epidemic existed.

On the other hand I know Health Executives who follow the daily records of infectious diseases with a scent as keen as that of a dog following a fox, and who by their faithfulness and zeal have saved a community from untold ills. Such a one told me that to follow these figures was the most thrilling work of his life.

Just as the meteorological observer reads his instruments daily in order to forecast the weather and give warnings of the coming hurricane, so the efficient Health Officer will daily study the reports of new cases of disease in order that he may be forewarned of an impending epidemic and take measures to check its ravages. No lighthouse-keeper on a rocky coast is charged with greater responsibility than he who is set to watch the signs of coming pestilence from the conning tower of the Health Department.

Vital statistics must be used hot; otherwise they are stale, flat, and unprofitable. But if vital statistics are to be used they must first exist.

It is a surprising thing to find that in the United States, and I have no doubt that this is true also in Canada, the important demand of this 20th century is not for a better and larger use of vital statistics, but for their very existence. We have as a nation no adequate and uniform registration laws, no annual tabulations of births and deaths, and hence no foundations upon which to build the science of American demography, a science which stands as the very basis of modern sanitation. In this respect we are far behind other civilized nations of the world.

This condition of affairs may be charitably regarded as a youthful sin of omis-

sion, but if it is much longer continued it will be nothing less than a national disgrace. It is gratifying to note that in the United States, and I hope also in Canada, there are indications of an increasing appreciation of this matter, and one after another our States are adopting the standards of registration and report established by the Bureau of the Census.

But some one says, "I would use the data if the physicians would only report their cases." The proper reply to such a remark is that it is the business of a Health Officer to see that the physicians do report their cases. Where laws exist requiring such reports to be made any physician who fails to do so is in contempt of the law and deserves to pay the penalty. But physicians are busy men and frequently it is of greater importance that they give attention to their cases rather than to the clerical work of preparing reports. Hence the mechanism for such reports should be made as simple and as convenient as possible. Arrangements might be made for receiving reports by telephone to be confirmed later in writing. Dr. Levy, the efficient Health Officer of Richmond, whose work has become famous throughout the country, supplies each physician with a box, which can be conveniently placed on his desk, provided with all necessary blanks, post cards and stamped envelopes for convenient mailing. Various methods are used for detecting the failure of physicians to report births and deaths and cases of disease. For example, if the death of an infant is reported a search is made to see whether the infant's birth had ever been reported. If not, the physician attending the family is requested to furnish an explanation. In other ways similar to this the physicians have been constantly reminded of their negligence until they have come to take the matter seriously, and since the benefits of prompt reporting have been made evident the physicians as well as Health Officers recognize that vital statistics promptly used are of practical benefit to the city in preventing disease as well as recording it.

It would be interesting to discuss some of the details of the collection of data and some of the probable sources of error, but time will not permit of our doing so and reference must be made to the books above referred to. By way of example, however, one source of error may be mentioned, mainly that due to the use of round numbers. In recording the dates of past events some will be given on the exact day of the occurrence, but where memory fails some are likely to be recorded as "on the first of the month," or, "on the 10th," or "about the 15th," as the case may be. The same is true in regard to recorded ages. An ignorant person of age 41 or 39 is likely to give his age as 40, a round number which in his mind is near enough. Such figures when aggregated with others correctly stated give undue prominence to figures divisible by 5. The tendency to this error may be discovered by finding whether an undue proportion of the collected figures are divisible by 5, or 10, or 25, or 100. Another means of discovering it is by plotting the data.

It is easy to make a fallacious use of averages and ratios. Fictitious accuracy should be avoided. If 35 out of 57 balls were white the percentage of white balls would be 61.404. The smallest possible error, that is one ball, would change the percentage to 59.65, or to 63.16. Clearly in such a case it is illogical to compute the percentages in fractions. Whenever percentages or death-rates are being compared and found to differ by small amounts the data should be scrutinized to determine whether or not the figures used have a real or a fictitious value. For example, the death-rates for populations of less than 1,000 are almost useless beyond the second significant figure.

Another danger is that common to all forms of reasoning. Namely, that of using *post hoc* for *propter hoc*. This and other fallacies are very likely to creep in unawares in statistical work under cover of apparent accuracy and thoroughness of investigation implied by the use of columns of figures. Bailey has well said that the phrase, "Other things being equal," has covered up a multitude of sins. As a rule, the other things are not equal. He also warns against the hidden errors that may lie in the use of the terms, "It is undoubtedly true that," and "it is probable in this case that. . . ." Of great importance is it, therefore, to make sure that the data collected are sufficient in kind and number for the purpose for which the statistics are intended. No better preparation for the work of the statistician can be

had than that given in a course of study in formal logic.

To sum up in a word, we may say that first of all vital statistics must be used with truth.

But statistics are not figures; they are numerical statements of facts. Unless this is realized vital statistics will be used to little advantage. Unless the facts behind the figures can be visualized they will mean but little to the sanitarian and to the public. Hence imagination is the second element to be considered.

When the Titanic sank with its hundreds of lives public imagination went aflame. The vital statistics of that disaster were studied from one end of the land to the other. Imagination pictured the tragic deaths of the lost and the mental sufferings of the saved. The recent floods in the Ohio valley likewise aroused the nation. The horrors of those terrible days were past description. No need for imagination to be spurred at such a calamity, yet the deaths due to those floods increased the annual death rate of Ohio by less than one-tenth of one unit per thousand. Yet when the death-rate for a State rises or falls by one or even by two or three units per thousand from scattered causes we comment coldly on the fact and vital statistics are then only figures,—something to tabulate and put in reports to be put away on dusty shelves.

Somebody was looking over some recent figures for the typhoid fever death-rate in one of the boroughs of New York City and found it had fallen to less than ten per one hundred thousand, and remarked that "now this disease has become insignificant." Yet in that district of a million people the rate of ten per one hundred thousand meant that a hundred people died within the year of this preventable disease, and that a thousand others, perhaps two thousand, lingered through long weeks of sickness; it meant that other thousands gave their time as nurses and waited with anxiety through long weeks; it meant loss of income to many and financial shipwreck to some. When viewed in this light vital statistics have a meaning far beyond the conception of the mathematician, or the vagaries of the laws of probability. The statistician must feel that he is dealing not with figures but with the facts of life and death. Seriously must he regard his work. With this conception he will be spurred to greater accuracy and be more careful in drawing his conclusions.

We hear a good deal said about the scientific use of the imagination, yet we fail to apply it to this branch of science.

Not because of its importance, but merely by way of illustration, I would like to call attention to one of the causes of our decreasing death-rate, for it is a fact that the general death-rates are decreasing in nearly all parts of the civilized world. To what is this decrease to be attributed? To many causes. To improvements in the art of healing, to improvements in surgery, to advances in the sanitary arts, and to preventive medicine and to other causes. But there is one fact often lost sight of, namely, that the birth-rate is decreasing and this tends to make the death-rates lower. This decrease of the birth-rate is a common phenomenon in most of our civilized communities. In order to understand how the birth-rate influences the death-rate it is necessary to consider the specific death-rates at different ages. The specific death-rate is high for children less than one year of age. The rate falls rapidly during the second and third years, and reaches a minimum at an age between twelve and fifteen years. From that time on it rises slowly until the age of sixty or more, and then rises rapidly to old age. Hence it follows logically that when fewer children are born there are fewer children to die, and in consequence the general crude death-rate of the community is lower when fewer children are born.

We might even go farther in our scientific use of the imagination and correlate the decreased death-rate with the increased age at which persons marry to-day as compared with a generation or two ago. For it can be readily shown by figures which I will place upon the screen that postponed marriage tends to a reduction in the number of children born. We should be careful then not to take too much credit to ourselves as sanitarians for the decrease in the death-rate. Social conditions of many kinds need to be reckoned with.

We should also use care in comparing the death-rate of one city with that of another. We must realize that cities are great aggregates of individuals who differ not only in age, but also in sex, in nationality, in social conditions, and in many other

ways, and that all of these facts have a bearing upon the healthfulness and the expectation of life of the individuals. The death-rates for two cities, therefore, cannot be fairly compared where there are great differences in the constituent individuals. In a recently settled community there may be fewer children and fewer old people than in a community of longer standing. Hence the death-rate in the newer city may be low, not because of better sanitary conditions, but merely because of the absence of persons at those ages for which the specific death-rates are high. And even in the same city similar conditions may be found in different wards, or in different parts of the city, so that it is unfair to compare the deathrate in one ward with that in another ward, unless the differences in the constitutent individuals are taken into account.

Ordinarily we do not go to the trouble of correcting our death-rates to allow for these differences in age and sex and nationality, but it is possible to do this, and Health Officers should study this matter carefully so as to know how to make proper comparisons. The method of computing these "corrected deathrates" may be found in the books previously referred to. By way of illustrating the importance of the corrected death-rate let us consider two cities, A and B, each of which has a population of one thousand, but which differ in the fact that in A there are 100 persons under 10 years of age, while in B there are 150 persons under 10 years of age. If the specific death-rate for persons under 10 years of age be taken as 50, and that of persons over 10 years of age be taken as 15 per 1,000 in both cities, then applying these specific death-rates to the number of persons below and above 10 years of age, we find by calculation that in A the general death-rate of the city was 18.5, while in B it was 20.2 per 1,000. This wide difference is due merely to the fact that in B there were 50 more children under 10 years of age than in A out of a total population of 1,000.

We might continue our study of the scientific use of the imagination in vital statistics by ascertaining the relation between immigration and the death-rates in manufacturing cities, or by finding the relation between the specific death-rate from tuberculosis and the price of wheat, or the relation between the increase in the use of water gas for illuminating purposes and deaths from gas poisoning. We might well speculate upon the possible connection between the notable increase in the specific death-rates from circulatory diseases in adults and the intensity of modern city life. For it seems to be a fact which cannot be gainsaid that while the results of sanitary reforms are saving the lives of many people, notably the lives of children, the expectation of life for adults is lessening. In other words, more people to-day live to be 40 or 50 years old than formerly, but of those who do live to be 40 or 50 years old the chances of living to a ripe old age seems to be gradually lessening. The actuaries of the insurance companies are naturally much concerned over this situation, and it behooves our Health Departments to consider this question seriously.

Again in studying morbidity statistics with a view to the early detection of epidemics there are ample opportunities for the use of the imagination. Perhaps no servant of the public uses his imagination to a greater extent than a well-trained detective. It is precisely this mental attribute that is required in a Health Officer who is constantly on the watch for impending outbreaks of disease and whose duty it is to ascertain the cause of an outbreak as soon as indications of it appear. Certainly work of this kind cannot be considered as devoid of interest.

We now come to the third phase of our subject, the use of vital statistics with power. By that I mean such a use as will make them effective. It avails little to keep our records and draw our deductions unless we use the results. The man who merely tabulates data and does not study them is a clerk and not a statistician. Statistics, we said before, are numerical statements of facts correlated for study and comparison. The collation means nothing without the critical study. That is the trouble with most Health Departments today. The records are kept by clerks and not by statisticians.

When the Health Officer has studied his data and drawn his conclusions, his work as a statistician ends, but his most important work remains to be done. If his findings show that an epidemic exists and that the cause of the epidemic is clear the important thing is to have the cause removed.

For example, if a typhoid fever outbreak is traced to an infected public water supply the important thing is to remove the infection and to take such steps as are necessary to prevent its recurrence. If scarlet fever be traced to a certain dairy the important thing is to prevent the spread of the disease through the milk. To do these things requires the co-operation of other officials, of the engineers, of the police, of the executive officers, and of those who make the laws, and all these must be supported by public opinion. Hence the people must be convinced of the truth of the statistician's findings, and not the least important part of the Health Officer's work is that of displaying his data and his findings in a clear and attractive way.

When tables are made they should be as simple as possible. Each column should have a proper heading sufficient to explain what the figures mean. The figures themselves should indicate the accuracy with which the data are collected. It is seldom that statistical records are accurate to more than three or four significant figures. Hence to accumulate large numbers of significant figures confuses the mind and indicates not accuracy but mental laziness on the part of the statistician. To prepare a good table with a title which clearly explains what the table contains is an art which few Health Officers ever acquire.

If diagrams are needed to illustrate the statistics, and this is often the case, the diagrams should be well drawn, well lettered, and also have a clear title. Care should be taken not to have too many lines or to have these lines overlap in such a way as to be confusing.

Diagrams are used for two different purposes. One is for study by the statistician himself and is prepared with the idea of helping him in drawing conclusions. The other type of diagram is prepared for purposes of illustration after the conclusion has been already obtained. Its especial object is to display the data and visualize the conclusion. Such a diagram should be drawn according to the artistic laws that apply to a cartoon, an important one being that it must instantly convey its meaning to him who sees it. There are various ways in which diagrams are prepared for the purpose of presenting statistical facts, and a few of these will be illustrated by diagrams shown upon the screen.

In the use of vital statistics certain things must be avoided by Public Health Officers. One of these is a too hasty publication of conclusions. In a matter where so many factors may be involved it is easy to be wrong and errors may have serious consequences. If the cause of an epidemic is wrongly located valuable time may be lost and much money may be wasted in doing things that do not need to be done while the epidemic goes on unchecked. An outbreak of typhoid fever wrongfully attributed to milk may injure a milkman's business and reputation for life. The oyster business has been seriously injured by injudicious statements on the part of the Public Health Authorities, and the same is true of the ice business. Facts need not be withheld from publication, but in drawing conclusions judgment should be suspended until the statistician is perfectly sure of its ground.

Another thing that should be avoided is that of making unusual and extreme comparisons for the sake of attracting attention. The attempt of some Health Departments to use popular bulletins is both pathetic and amusing. By way of illustration of these undesirable comparisons may be mentioned the story that has been recently going the rounds of the magazines. A man said to his friend, "I have been studying vital statistics and have been appalled at the number of deaths that are occurring in the world. Why, just think! Everytime I breathe somebody dies." His friend replied, "Why don't you chew cloves"?

We come now to a recital of some of the practical benefits of what may be called "applied demography" in the service of the Health Department. It is not necessary to enlarge on the use of morbidity records in the forecasting of disease, and their use in the practical control of epidemics, but it should not be forgotten that there is a reciprocal effect of this work. One of the most important results is the education of the Health Officer himself. One cannot carefully and persistently study the vital statistics of a city without becoming a more efficient public servant. Knowledge is power here as everywhere. Knowledge of the plague spots is pre-requisite to their eradication. This knowledge is at best acquired slowly, especially if the one has not been trained in the use of statistics.

The need of long tenure in office is thus seen. It is to be hoped that it is not far distant when all Health Executives will be technically trained men,—men who have received, at least, a diploma in Public Health.

Vital statistics also educate the public as to the health conditions in their cities. Dr. Rankin has said that most sick towns do not know that they are sick. He once made the experiment of asking the physicians and city officials of a southern city as to their opinion of the health of the city. The concensus of these opinions was that the place was a healthy one, yet the vital statistics showed it to have almost the highest death-rate of any city in the State.

The general death-rates and certain specific death-rates should be published in the local papers with as much regularity as the records of the weather bureau,—not as headlines to appear only when there is an epidemic of some disease, but in such a way that the reader would come to look at these rates as a matter of course, and notice whether the figures were high or low. At present who knows what is high or what is low for the general death-rate of the city in which he lives?

We have come to regard 70 degrees as summer temperature, and we regard 0 degree as very cold. We have come to regard a body temperature of 99 degrees or 100 degrees as a condition of fever, but who knows whether a death-rate of fifteen or twenty per thousand is indicative of satisfactory hygienic conditions in his city or not. In this matter the public will have to be educated with patience. Nevertheless the attempt should be made.

In time the public will come to regard a low death-rate with justifiable civic pride, and a high death-rate not as a visitation of Providence, but as an indication that something is wrong that needs to be corrected. Vital statistics, therefore, will serve as sort of measure of the efficiency of the Health Department service.

The comparative study of specific rates for different diseases should serve also as a basis for adjusting the expenditure of the Health Department. At present our Public Health budgets are illogically prepared. We do many needless things, Dr. Chapin says, because we have always done them. Some of our habits were acquired before the days of bacteriology and preventive medicine, and it is hard to break loose from them. It is time that greater discrimination was used and the public money spent where it will do the most good. Logically the greatest energy should be turned to those diseases that do the most damage and to those activities where definite benefits have been known to result.

For example we note as a matter of experience that contaminated water causes typhoid fever, and we note that the purification of such water reduces the typhoid fever death-rate. It is logical, therefore, to spend money for water purification. We do not, however, know that the treatment or purification of sewage insures a like result. Expenditures in this direction are of questionable advisability, so far as life saving is concerned, although expenditures for sewage treatment may be justified for other reasons. While we talk much about typhoid fever and spend large sums of money for its prevention, and properly so, we fail to remember that there are other diseases far more destructive of life than typhoid fever, and that some of these do not receive anywhere near the atention that they deserve.

Statistics indicate that various economic and social conditions have an important bearing upon the health of the community.

The increasing debts of our cities, towns, corporations, and we may add the debts of individuals as well, are likely to have a very material effect on the public health. The last special report of the U.S. Bureau of the Census on financial statistics of cities of over thirty thousand inhabitants show that during the last eight years the annual revenue receipts in hundred and forty-five cities had increased on an average from $20 to $27 per capita, a gain of 35 per cent. In New York City the budget appropriations increased from $27 in 1900 to $34 in 1910. The report also shows that in many cities, and especially in larger ones, the bonded indebtedness is increasing alarmingly. As long as the cities continue to grow and assessed valuations continue to increase the danger ahead is not so easily discerned. But what will happen when our cities cease to grow at their present rate, and when the interest on the debts incurred begin to bear more heavily on the taxpayer? There is certainly grave danger that our reckless spending may bring a

terrible retribution all along the line from the man who mortgages his house to buy an automobile to the nation that squanders its millions on battleships and standing armies.

No where else is more discrimination needed perhaps than in the efforts made to improve the quality of our food supplies. Here exaggeration is in danger of running riot. Ice is said to transmit disease. Perhaps it can, but it almost never does. Polluted oysters are said to transmit typhoid fever. Doubtless they can, but they very seldom do. There is need of studying all these matters from the quantitative as well as the qualitative standpoint. So also the egg question, the milk question and the use of preservatives and the effect of cold storage must be studied as to the magnitude of possible dangers, and the element of cost cannot be ignored even by sanitarians and hygienists. Pure food means more expensive food and if the requirements are stricter than they need be, it means useless expense. If in our enthusiasm for the saving of life and the protection of health, we pile up debt, we must remember that in the long run debt means poverty and poverty means deprivation and disease, so that in the end we may fail to accomplish that for which we strive.

In the field of public hygiene and sanitation as well as in all other departments of public service there is need of careful discrimination. There is danger lest zeal for the public health service in certain directions be carried too far. Some sanitarians have said that no expense can be too great if a human life is saved. This is not true if the cost is paid at the expense of generations to come, and if the same amount of money spent for saving one life could have been made to save many more lives if spent in a different manner. We all rejoice in the reduction of the death rates of our cities, but we are coming to realize that, as Professor Jordan has said, there are fruitless as well as fruitful lines of endeavor in the public health service. These matters must be sifted out by a careful study of vital statistics.

We see, therefore, that no health officer is worthy of the name if he does not know how to deal with statistics and how to use them with truth, with imagination, and with power.

HEALTH MATTERS IN ONTARIO

By DR. ADAM H. WRIGHT.

(Presidential Address.)

It is provided in the Public Health Act of 1912 that there shall be an annual meeting of the Health Officers of Ontario, and it shall be the duty of every Medical Officer to attend the Conference which shall be held at such time and place as may be determined by the Provincial Board.

At the last meeting of the Canadian Public Health Association, the Medical Officers of Health met in a separate section and deemed it expedient to organize this Association, to be designated the "Ontario Health Officers' Association." It will be readily understood, and probably generally recognized, that this Association will become a great power for good in Ontario. It gives me much pleasure on behalf of the Provincial Board to extend a hearty welcome at this, our second meeting, and also to express the hope that our meeting will be both pleasurable and profitable.

We rejoice to know that there is a general consensus of opinion that we enjoy the blessed privilege of working under a great chief, the Provincial Secretary, a man who is considered in all parts of the civilized world one of the ablest and most progressive legislators in connection with Prison Reform and matters pertaining to Public Health that this or any other country has produced.

One of the most important enactments ever passed by the Legislature of the Province was the Public Health Act of 1912. It would not be fitting on this occasion to discuss in detail the various clauses of that Act. It seems well, however, to refer to the valuable work of the medical men in Parlia-

ment during discussions as to the new clauses and the various proposed amendments to the former Act. I should like to refer to one member especially, Dr. J. McQueen, the able, broad-minded representative of North Wentworth, who showed commendable zeal in helping in every way to make the Act as nearly perfect as possible. The result of the combined efforts of the Provincial Secretary and various members of the Legislature was the passage of an Act which is considered by experts in various countries one of the best in the world.

While I have no desire to discuss the whole Act, I should like to refer to one detail. Mr. Hanna (wisely, we think) decided to divide the province into seven districts. We quote as follows from the clauses referred to:

Section 13 (1).—The Lieutenant-Governor-in-Council may divide the province for the purposes of the section into not more than ten health districts, and may appoint a legally qualified practitioner to be known as the "District Officer of Health" for each such district.

(2) Every District Officer of Health shall be paid an annual salary of not more than $2,500 and actual expenses incurred in the discharge of his duty.

(3) The Council of every County forming part of a health district shall pay to the Treasurer of Ontario such proportion of the salary and expenses of the District Officer, based upon the population of the county, exclusive of the population of any city or separated town within the county, as may be certified by the Chief Officer.

(9) Every District Officer of Health shall act under the supervision and control of the Board, and shall report to it at least monthly and at such other times as may be required, and shall in such report give such information as may be required by the board or by the regulations.

The Provincial Secretary, with his usual forcefulness and thoroughness, decided that the District Officers should be properly prepared and fully equipped for their work. The following solid, level-headed practitioners were appointed:

District No. 1.—Counties of Elgin, Essex, Kent, Lambton, Middlesex and Oxford: Dr. D. B. Bentley, Sarnia.

District No. 2.—Counties of Bruce, Dufferin, Grey, Huron, Perth, Wellington and Waterloo: Dr. T. J. McNally, Owen Sound.

District No. 3.—Counties of Brant, Haldimand, Halton, Lincoln, Norfolk, Peel, Welland, Wentworth and York: Dr. D. A. McClenahan, Waterdown.

District No. 4.—Counties of Ontario, Durham, Northumberland, Prince Edward, Hastings, Peterboro, Victoria, Muskoka and Simcoe: Dr. George Clinton, Belleville.

District No. 5.—Counties of Lennox and Addington, Frontenac, Leeds, Grenville, Stormont, Dundas, Glengarry, Prescott, Russell, Carleton, Lanark and Renfrew: Dr. P. J. Moloney, Cornwall.

District No. 6.—Districts of Nipissing, Parry Sound, Temiskaming and Sudbury: Dr. W. E. George, Haileybury.

District No. 7—Districts of Algoma, Thunder Bay and Rainy River: Dr. R. E. Wodehouse, Fort William.

The new officers came to Toronto August 1st of last year, and took a course of instruction in Practical Hygiene in the University and in the Provincial Laboratories, and also attended various "Health Meetings" in Canada and the United States, including the International Health Congress in Washington. It is now generally admitted by those who have opportunities to judge that these District Officers are doing admirable work. They are, moreover, giving very valuable assistance to the Medical Officers of Health in all parts of Ontario.

We as physicians and officers of health have been endeavoring to educate the people as to the best methods of promoting public health, especially by taking reasonable precautions against preventable diseases. Are we making headway? Is Dr. Hastings applying efficient methods in Toronto, or does he spend his time chasing roosters out of back yards? Well, gentlemen, I do not happen to know what he has done in this direction, but I do know that he is doing magnificent work for Toronto so far as the health and comfort of its citizens are concerned. I think I can speak also with much confidence as to the administrative work done by the Health Officers of Hamilton, Stratford, St. Catharines and many other municipalities in the province.

We are making at least some headway. Our physicians get a bit disgusted at times because their patients appear to be somewhat indifferent about the good advice

rendered. But many of these patients do not forget, nor are they ungrateful. In one instance, the husband, when dressing in the morning, put his hands in this trousers' pockets, and thought he noticed vacant corners. He said to his wife: "Did you go through my pockets last night, Nellie?" "Yes, dear, Dr. Fotheringham told me I needed a little change." In another instance, it came the other way about between husband and wife. The wife said: "John, dear, Dr. Caven says that I need a change of climate." "All right," replied the husband, "the newspapers say it will be warmer to-morrow." However, gentlemen, we have to consider certain more serious matters in connection with the almost innumerable problems which arise pertaining to public health.

One of the most important health matters of to-day is the disposal of waste and garbage in cities and towns, and I am glad that we shall have papers and discussions on this subject at this meeting. I have watched our methods in Toronto with much interest during the last two years, and I have to confess with much sorrow that they have been as a general rule very crude and unsatisfactory. I think that even Commissioner Harris and Mr. Wilson will agree with me in this regard, and I note that they contemplate making many improvements in the near future. I have noticed that one household may handle its garbage in such a loose and objectionable way that it becomes a positive nuisance to a comparatively large neighborhood. I think, however, that there is one feature that has been to a certain extent overlooked. A large amount of the waste and garbage could be burned in the house. In many instances the householders might burn four-fifths of the garbage they dump into the back yards or on the streets. To obviate some of the difficulties it might be found profitable to employ more sanitary inspectors to teach householders how to dispose of their garbage within doors, and thus reduce the work of carting it away at least one-half.

One of the best features as to sanitary matters in recent years is the great interest taken by the lay press in everything pertaining to the health of the people. While there are some carping critics, most of the writers in magazines and newspapers discuss health problems in a remarkably intelligent way. Sometimes local politics appear to have too much influence in editorial utterances. It appears, however, that our local press in the City of Toronto is disposed to be eminently fair and just. So far as I know, the same may be said of the work of the lay press in all parts of Ontario. It seems to me also that the members of the councils of all municipalities, large or small, are taking an increased interest in such matters, and are helping and encouraging their officers of health more than ever before.

It will be remembered that early in January last things appeared to be going wrong with our filtration plant and other things in connection with our water supply in Toronto. The cry was raised that we should at once bring a British expert out to investigate. I ventured to suggest to the Mayor and certain Controllers that it was unnecessary and unwise at that time to consult an outsider. I thought that the matter might better be investigated by Commissioner Harris, Dr. J. W. S. McCullough, Dr. Hastings and Dr. Amyot. These are able men, and know the situation and all the difficulties, and are well qualified to investigate and solve such difficulties. I may say that I offered this suggestion as a ratepayer and not in any official capacity, because I had no authority from our Provincial Board of Health, which has no desire to dictate to any municipality unless interference becomes actually necessary. It gives me much pleasure to say that I have always been treated with the utmost courtesy when I made any suggestions to the Mayor, Controllers or Commissioner Harris.

My very pleasant relationship with these men, and the wondrous kindness of the whole Council of the City of Toronto give me a certain amount of courage in speaking on this occasion. I desire to say a few words about a question of vast importance, that is, the purchase of the Toronto Street Railway, and the unification of the whole local railway system. I shall not attempt to discuss the financial features of the purchase, partly because I feel that I scarcely have enough financial ability to run a peanut stand. I shall say something from the standpoint of morality and health. The overcrowding of our street cars, especially in the winter months (for which, so far as I understand, the citizens and not the

railway authorities, are responsible) means a serious peril for the passengers.

In a general way it may be stated that the air in the closed car which is over crowded becomes intensely foul. Under such circumstances certain diseases are produced, such as tuberculosis, quinsy, "ulcerated" sore throat, diphtheria and many other ailments, including various forms of loathsome diseases of the skin. In addition, it appears to me that the great majority of our citizens do not appreciate the terrible indecency arising out of the worst possible form of crowding, that is, the men standing in the aisles and the women sitting on the benches. The conditions have become so intolerable at times that respectable women and girls will walk miles rather than take chances in the street cars during "busy hours." Of course, providing the remedy for the overcrowding would cost something; but considering the great improvements that would result as to comfort, health and morality, it would appear that the cost would be a small matter in comparison with the inestimable benefits derived.

And, now, Ladies and Gentlemen, a few words as to ourselves. We are now called the "Ontario Health Officers' Association"; in the near future it is probable we shall be known as "Hanna's Scouts." Our work under the leadership of our distinguished chief will be in the direction of looking for the innumerable evils which endanger public health, and our aim will be to do all in our power to overcome such evils. I sincerely hope, and certainly believe that we shall be able to accomplish much good for this great province which we all love so dearly. In this connection, it seems particularly fortunate that we have as our Chief Officer of Health in Ontario Dr. J. W. S. McCullough, one of the best sanitary experts, and one of the ablest executive officers in North America.

THE IMPORTANCE OF MILK AS A FOOD*

By A. W. MacPHERSON, M.O.H., Peterborough.

The topic that has been assigned me for consideration is milk. It is such an important subject that I regret my inability to do it justice, but I thought I might present a few points that would stimulate discussion, and from this some help to us all might result.

In an association of this kind it is not necessary to dwell on the food value of milk, or its general use as an article of diet. It is used by all classes, the rich, the poor and the middle alike; it is suitable for all ages from infancy up, whether for the well or the sick. And we are concerned with all classes, but more especially with those in whom the vitality is low, and the resisting powers weak. I refer to the bottle-fed infants, the young children, the sick and the convalescents.

It is conceded by all who have a large experience in infant-feeding, that cow's milk properly modified is the best substitute for mother's milk. Further, it is a well-known fact that thousands of babies die annually, and a large proportion of them die, as a direct result of improper feeding. It therefore becomes our duty as practitioners, and as health officers to do all that is in our power to see that a proper supply of pure, wholesome milk is provided, and we might go a step further and see that it is supplied in such a form that those having the care of infants, will not be so liable to make the mistakes that are attended with so many fatalities.

Then, let us consider the first part, the pure milk supply. We all know that even where the greatest care is taken in the production and handling of the milk, there is a large number of infecting organisms present in every cubic centimeter, and our aim should be to reduce this to a minimum. How is this to be secured? To my mind, we should first satisfy ourselves that the cows are perfectly healthy, and one of the early steps should be to have them tuberculin-tested, and those reacting removed from the herd.

Let me stop for a moment to dwell on this point. The laboratory shows beyond question that tubercle bacilli are present in milk from infected cows. Couple with this the records from post-mortem examina-

*Read before Health Officers Association, Parliament Buildings, Toronto, May, 1913.

tions, which show that at some time during life the greater proportion of human beings are infected with tuberculosis. The work being done recently in connection with school inspection, indicates that a much larger number of children are affected with tuberculosis than was previously thought. Is it not possible that infected milk contributes its share as a causative factor? In support of this, I would like to draw your attention to the prevalence of the disease among hogs. Some few months ago I was struck with a remark, made to me by one of the leading men in the pork packing industry, to the effect that about 8 per cent. of all pigs slaughtered showed post-mortem signs of tuberculosis, and those from certain districts, where they were fed on the by-products from cheese factories and dairies and from localities with good, warm bank-barns, the percentage ran up as high as 28 and 30%. These are facts that the records of the slaughter houses will confirm.

To me it is not a difficult matter to arrive at a conclusion that milk from tuberculous cows may be a grave source of danger. The steps in the reasoning are clear: tuberculosis is very common among cattle, and especially in those districts with the so-called good bank-barns; tuberculous cows give infected milk, and the lower animals develop the disease when fed on this milk or the milk products.

Reasoning from analogy we must arrive at the conclusion that if pigs are in danger as a result of the diet, how much more will infants, delicate children, invalids and, in short, any human being be subjected to the same danger. And if such is the case is it not serious enough to warrant some active measures on our part?

Then the cows should be kept healthy. Sufficient light and ventilation should be provided, and due attention given to the fodder, the water, and the general comfort of the cows. The feed bears an important relation to the health of the animal, as well as to the quantity and quality of the milk. To get the best results, the fodder should be varied; due consideration being shown to the amount of proteid fat and carbohydrates. Scanty feeding results in a poorly nourished cow, giving a scanty supply of milk. Fodder rich in carbohydrates and poor in proteid produces a small amount of milk of a poor quality, while on the other hand a food rich in proteid will have the opposite effect. Milk from cows fed on dry fodder will cause less disturbance in the children. Wet grass even will produce a diarrhœa in the cows and the disturbance may be communicated to the infant through the milk. Mildewed or fermented hay, cabbage or turnip leaves, pealings, swill or garbage are forbidden for the same reason.

But, even if we have healthy cows producing a pure supply of milk, contamination may easily result. For this reason, those who have anything to do with the milking or the handling of the milk, or the washing of the utensils, should be healthy, intelligent and conscientious. They should be instructed in the importance of keeping their own persons clean and facilities for so doing should be provided them. The cows and the stable must be kept clean, and proper appliances for washing the utensils, cooling and straining the milk should be at hand.

These points are all taken up fully in the very excellent report of the Ontario Milk Commission, and it is not necessary for me to dwell on them. But we should make ourselves familiar with the contents, and, where milk is being sold in the municipality, it will be our duty to see that a by-law is passed to regulate the production and sale of milk, in accordance with the recommendations of this committee, and to appoint a man whose duties will be to inspect the dairies, and, as far as possible, to train those engaged in the work.

But we can, and should do more than this. The heat of the summer, the carelessness of the producer, the carelessness and ignorance of the mother, must be reckoned with, and something further be done if the sickness and deaths of the infants are to be prevented. What can be done, and is being done in other places, to make the milk safer? To my mind "certified milk," as is produced by some of the dairies in Toronto and in other places, is the best. But this is impracticable, owing to the cost and the difficulty in securing a sufficient quantity. Next to this comes the clarifying and pasteurizing process. We have now, in Peterboro, a firm who are enterprizing enough to undertake this. Their cows are all tuberculin-tested, mechanical milkers

are being installed, and after being clarified and pasteurized the milk is delivered in bottles.

Another step will be to encourage the establishment of a dispensary, where mothers can purchase feeding for the baby on a prescription from a physician. This should be a simple matter. All the large dairies have, or should have, the facilities for estimating the butter fat of the milk and cream. With this knowledge, it is very easy to make up whey and cream mixtures, or any modifications of the upper third, upper half, or whole milk. And it would be a big relief to us as medical practitioners in the smaller cities and towns, to be able to write a prescription for a mother with a bottle baby, and to know that she is getting a mixture of proper strength, already clarified and pasteurized.

But these conditions will not obtain as long as there are so many small dealers in the business. In our town, with a population of 20,000, we have over fifty retail milk vendors, and, doubtless, a similar state of affairs prevails throughout the province. The result is that the cost of delivery is about four times what it should be, and what little profit is made is divided up among many. We are hoping that the good milk by-law that we have adopted, and a thorough inspection of the premises, coupled with a publication of the results, will have the effect of driving out those who consider milk vending only a side line, and who are not in a position to do it right. This will leave the way open for some to do business on a larger scale, and do it in a way that will be satisfactory to everybody.

Before concluding, let me summarize the points that I wish to lay before you:

1. The prevalence of tuberculosis among cattle.

2. The grave danger to those using untreated milk.

3. The necessity for a proper milk by-law with inspection.

4. The importance of fodder in relation to the quantity and quality of milk.

5. The establishment of milk laboratories.

In connection with these points, I would like to say that I think it is the duty of the Government to take up the matter of having all cattle tuberculin-tested, and of having those showing a positive reaction removed from the herd. Further aid can be given us by having experienced men, whose duty it will be to train the farmers and dairy men, so that the public may be protected against dangers arising from milk, milk products, and the by-products. And, lastly, is the establishment of a municipal milk depot feasible and desirable? In my opinion it is both. Is there any public utility that is of more common local interest? Municipal abbatoirs are being demanded, and are being built, because cattle that are considered unfit for human consumption are being slaughtered by careless, ignorant, or unscrupulous butchers. Is the public not in greater danger from the consumption of untreated milk than from using meat that will be sterilized in the cooking process?

HELPING CHILDREN TO GOOD CITIZENSHIP

The Work of the Children's Aid Societies.

By J. J. KELSO.

"Oh, little feet that such long years
Must wander on through hopes and fears,
Must ache and bleed beneath your load,
I, nearer to the wayside inn,
Where toil shall cease and rest begin,
Am weary, thinking of your load!"

The human soul without education is like marble in a quarry—showing none of its inherent beauties until the skill of the polisher brings out its colors. Thousands of human beings have grown up to adulthood and have frittered away a long existence that might have been useful and helpful to themselves and the world had they received the moral care and education to which they were legally entitled. It is seeing and hearing daily of these wasted and wronged young lives that spurs us on to increased activity in child protection. There is no longer any just reason for the neglect of

1. 2. 3. 4. 5.

children, for our laws and machinery are ample for the prompt investigation of every complaint.

Twenty years ago last month the Children's Act of Ontario was officially proclaimed, and since that time many thousands of boys and girls have been materially benefited. Youngsters from Shelters, Orphanages and Foundling Asylums have been sent out to foster homes, and to-day they are heads of families, housekeepers, farmers and mechanics; the proportion of absolute failures being exceedingly small. Lack of mental capacity is the great handicap most frequently met with in those who fail, and for this an earlier generation must be held responsible.

But it is the educational feature of this work that has always been kept prominent. Instead of resting satisfied with rescue work, the spotlight has been turned on the social wrongs and inequalities that have created misery and despair. The oppression of the poor has been a prolific cause of delinquency; low wages, high rents, unsanitary houses, lack of ordinary comforts —these keep philanthropists busy at rescue work.

The head office in the Parliament Buildings directs and supervises operations throughout Ontario. There are sixty-five Children's Aid Societies all engaged in the same laudable work. They investigate complaints of ill-treatment, truancy, child-labor, denial of educational advantages, homelessness and delinquency. In the Children's Shelter the friendless or neglected child is temporarily provided for, and its physical and moral wants adjusted. Homes in the families of the community are found and reports of each transaction are forwarded to the Central Office for the purpose of record. Over ten thousand children have been reported for supervision and friendly care in the past twenty years. Of course, the chief purpose of the Society is to remove the cause of complaint rather than the child, and many careless, drinking parents have ultimately come to realize that the Children's Aid Officer, through his intervention, was the means of bringing real happiness to their home.

The responsibility of parents for the conduct of their children should never be overlooked. Often boys are arrested for wrong doing and discharged or sentenced without the presence of the parents being required or proper inquiry made as to the contributory negligence of indifferent fathers. It is a rare case that children brought up in a normal home under reasonable control develop into law-breakers. It is the neglected child that becomes the delinquent, and it is the wrong conditions that should be dealt with rather than the unfortunate victim.

There are many good people, and even prominent Christian workers, who do not realize any personal responsibility toward neglected or delinquent young people. People are apt to forget that souls are saved not en masse, but as units, and that the restoration of one individual is far more important than a whole series of brilliant essays. All may have a share in this great work, and for every effort made there is ample reward in the consciousness of young lives strengthened for good and noble ends. The training and protecting of children is the honest form of patriotism.

DISPOSAL OF DOMESTIC SEWAGE IN SUBURBAN AND RURAL AREAS*

By ROBT. E. WODEHOUSE, M.D.,

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This paper is intended to be a practical discussion of the above subject, from the point of view of a M.O.H., rather than a technical engineering treatise of the same. Generalities predominate in it, and interpretations of the scientific factors, into ordinary parlance have been the desire of the writer.

Nature of Domestic Sewage?—Fuller's work, 1912, defines sewage as,—the spent water supply of a community, together with those household wastes which are removed by water carriage in underground channels, supplemented in some instances by street washings and industrial wastes. Among other things sewage, then, would

*Read before Health Officers' Association, Parliament Buildings, Toronto, May, 1913.

contain, bath water, laundry water, dish and culinary water, human feces and urine, fats, oils, soap and if stable floor is of concrete, water tight, drained by a sewer, we have the animal urine and watery extracts of animal feces, additional.

In suburban and rural areas, storm sewers very seldom enter into the disposal proposition, they being usually handled by ordinary underdraining, the effluent being discharged into larger district drains or creeks. House sewage and stable sewage are the items to be considered.

The chemical constitution of sewage might be appropriately represented in grams per capita daily, as follows:

Oxygen (consumed, boiled 5 min.)	20 grams.
Nitrogen (total)	16 grams.
Chlorine	18 grams.
Suspended matter (mineral 10 grams) (organic and volatile 50 grams) total	60 grams.

These suggested proportions of constituents vary exceedingly in different houses, different localities, and even in the same place at different hours of the day. These chemical constituents are received from feces in different stages of putrefaction and disintegration; from cooking and culinary wastes in the same different conditions; from chemicals derived from soap, fats, etc., drained from kitchen and laundry sinks and from salts in the water used for household purposes or flushing of water closets.

Another important constituent of sewage is bacteria—estimated as 320,000,000,000 passed per capita per day. These also vary in their number, variety and combined action.

When the day's or portion of a day's sewage is gathered in a receptacle, it will consist of a fluid portion and an undissolved or solid portion. This solid portion (undissolved) goes to make up sludge, and is held in suspension. Part of the suspended portion will float, part will sedimentate, and a portion will, being so finely divided as to refuse to answer to the practical action of sedimentation or flotation decline to do either. Again some of it will dissolve or go into true solution and a portion will form into colloidal matter. The finely divided portion referred to above, has to be treated by chemical coagulators or forming colloidal matter, or be filtered out. Therefore suspended solids divide themselves into floating or scum solids, precipitating or sedimented solids and the finely divided solids forming colloidal matter or solids unresponsive to subsidence.

The suspended matter consists principally of oils, fats, and coagulated soaps. The fats and oils might be avoided by installing intercepting grease traps.

Modern requirements in the disposition of domestic sewage are that the sewage be conveyed from the different receptacles in the houses, to the place of treatment or disposal, in passages, pipes or sewers, the gas or air in the sewers not being allowed to get access to the living air in the interior of the house. The sewage must finally be disposed of so that no nuisance from odour of same or injurious contamination of soil or water result. This injurious contamination of soil or water may assume the nature of a germ infection of the soil or water, (a) by bacteria in the sewage, (b) or originating in the same; (c) it may be an injurious effect on the land, as (1) souring of the soil, (2) saturating the same, making it undrainable and unfertile or non-productive or it may be (d) a coloration of the water? (e) or a reduction of its available oxygen, thus starving out the fish or other contained life requiring the same. Finally it may be (f) the production of ptomain poisoning in the water, due to the action of putrefaction which has taken place in the sewage,—the bacteria being dead, but the resulting toxines, in their bodies, excreted by their bodies during life as well as those formed during the decomposition of the materials the bacteria were working on, forming the poison.

Methods and success of disposal of domestic sewage in urban areas.—The methods undertaken in urban areas to accomplish this ideal end result, have been numerous in their principle, crude in the early history of the work, and exceedingly highly developed in mechanism, cost and efficiency of late. A history of the engineering and hygienic work will not be undertaken, suffice it to say that the modern high requirements as to the condition of the final end product, after treatment,

meets the exacting demands just noted above. Thanks to the untiring efforts of the brainiest men of generations, following the professions of engineers and sanitarians, economic complete solutions of the difficulties are being solved. As noted above the nature of domestic sewage varies so in volume, quantity of solids and the consisteney and chemical constitution of the same, that the greatest elasticity of the treatment plant is required. Geographical conditions also are so different that available natural inclines of the surface formation of the earth, as well as suitable soil be conveniently located, are not always adapted to the most economical construction of a plant, choice of system, or conduit of same after operation is instituted.

The present day knowledge of sewage disposal resolves itself practically into the reduction or oxidation of all the content which can be reduced or oxidized; the separation or extraction of all non-reducible solids contained and the disposal of the resulting sludge and the liquid effluent. The non-reducible solids extracted are much in excess of what chemical analysis would prove to be non-reducible, because the portions whose reduction would be slow or retarded, cannot be given the necessary time or enlarged equipment necessary to final complete end results, as cost would be prohibitive and they can be safely handled with a practical expenditure as sludge.

This oxidation or reduction is not so much a straight chemical action as was one time thought. Bacteria are now known to play a most important role in the change. They, in the first place, by their life existence and multiplication, use up a great deal of the available oxygen, which might be utilized in the reduction of the sewage contents. The extent to which bacteria may consume this available oxygen is stated in the report of the work for 1894, at the Lawrence Experimental Station, in the annual report of the Massachusetts State Board of Health. In a Lawrence street sewer, the sewage is fairly fresh and contains a substantial proportion of dissolved oxygen. As the sewage passes through a small pipe 4,000 ft. to a receptacle at the treatment plant, it is found in this short transit to have lost it all, due to bacterial action in the sewage (Fuller, 1912, page 26).

In the second place the life existence of the bacteria and their multiplication takes place, to a large extent, in the organic solids, thus causing the reduction of these solids and an alteration in the constituents of the same. The gas formed by the bacteria in this action causes the solids to break up and disintegrate, giving other strains of bacteria an opportunity to work on the particles forming the interior of the broken up solids, which were not exposed to them before. Bacteria are said to make up 20 to 30 per cent. of the solid matter of formed feces, and 35 grams of formed feces are passed daily per capita (Fuller 35). All these are by no means living bacteria, nor are all the living bacteria contained, pathogenic to man. A high percentage of them have been killed out by their own life activities and secretions (autolysis).

It is, therefore, evident that in the treatment of sewage, that reduction of organic matter to a certain practical degree must be aimed at, accomplishing this by a combination of giving the bacteria an opportunity to economically assist and at the same time providing sufficient oxygen for the reduction to be accomplished. Along with this, the non-reduced solids must be extracted; those which float, extracted as much as possible by grease traps, or later gathered by baffle boards and bailed out of retention chambers, the finely divided solids refusing to answer to these methods, must be extracted with the assistance of added chemicals, as colloidal matter or filtered out.

The results of these steps in the treatment of sewage will be (1) the collection of grease in the intercepting traps. This is a small quantity of inoffensive matter not requiring discussion. (2) The removal of the floating solids as scum. This is small in quantity and should be placed on the sludge drying beds. (3) The sludge or sediment in bottom of retention chamber. This must be removed part at a time, every few months to a drying bed, and burned after 24 to 36 hours' drying. It is non-objectionable in odour. (4) A liquid effluent requiring further treatment and reduction, being still infective and dangerous to health.

A satisfactory method of handling the above mentioned stages of treatment, is by gathering the sewage to a central point, allowing same to pass into retaining chambers, called Imhoff tanks, which as seen in diagram are two storey chambers, acting simultaneously as sedimentation chambers and septic tanks or retention chambers to allow or aid bacterial action. They are built as follows, a long chamber 25 to 30 ft. deep, the length being several times the breadth, either gained by rectangular construction or by properly partitioning off a cylinder(as was done at the Provincial experimental station). The idea is to have two chambers one above the other, running the full length of the tank, being separated by a trough shaped false bottom, with an opening in the bottom angle of the trough. This opening is so constructed that the lip from the one side of the tank must overlap the other on the bottom side. This gives a protected opening from top to bottom, being almost impermiable to expulsive forces directed straight upwards. Spacious vents are constructed, leading from the upper angles of the roof of the bottom chamber, to the open air above tank. The bottom of the lower tank is graded to a point of depression, to facilitate the emptying of contents (sludge). Pipes with shut-off valves are attached to these points of depression. The effluent is poured in at one end of the upper chamber, below the high water level of the tank, it progresses along to the opposite end of the tank, being encountered by baffle boards, at upper surface and lower surface of the upper chamber. These retard the flow, aiding precipitation of solids and retaining the floating solids as scum, as well as gaining thorough mixing of the contents. The upper chamber forms an aerobic chamber, while the lower forms an anaerobic chamber. The decomposition of the precipitated solids progresses in the lower chamber. The gases formed gain vent through the vents referred to as leading from the uppermost angles of the roof of the lower chamber, the upheavals not causing the solids contained in the lower chamber to re-enter the upper chamber, owing to the overlapping of the lips of the trough. The weight of the fluids above tends to press the water out of the sludge at the bottom of the lower tank, at the same time forbidding the excess from the centre of the sludge of the small particles of gas formed there. This all aids in the economical handling of the sludge. The sludge is removed, in portions not sufficient to deplete the lower chamber entirely of sludge, every one to six months, as size of plant, available labor and proper weather indicate. The sludge is placed on drying beds of crushed rock or other suitable material 12 inches deep. The sides and bottom of the beds are impervious, and the effluent is drained back to the retention chamber holding the effluent from the upper tank, about to be conveyed to the treatment beds. Sludge is very heavy owing to the water content, same being about 90 per cent. a cubic yard, weighing about 210 to 280 lbs. short of a ton.

The oils and fats are such negligible quantities as not to warrant discussion. They are not putrescible. The floating solids are bailed out from between the upper baffles at times and placed on the sludge drying beds. They are also immaterial in quantity.

The next stage in the treatment is the disposal of the effluent from the upper chamber of the tank and from the sludge drying bed. It requires further reduction to make it non-infectious, non-odorous and non-injurious. This requires aeration and submission to beds sown with bacteria. The methods of distributing the effluent to the beds, the style of bed used, and the material utilized have given rise to numerous methods for this final treatment.

The effluent may be treated on broad irrigation beds, intermittent sand beds, contact beds, or percolating beds.

Broad irrigation beds necessitate considerable areas of suitable soil, of a pervious nature. The area to be used is underdrained, in the ordinary agricultural open joint underdraining plan. The surface is then trenched in a shallow manner. The effluent is carried by feeders to these shallow trenches and allowed to flow into the trenches, in this way being spread over the land. Sub-soil irrigation is also carried on in some places. Both areas are in some places cropped successfully. Intermittent sand beds are natural, in some places and artificial in other. The

principal is the same in all these beds. The effluent, is distributed over the treatment area in different manners and passes down through varying necessary depths, for satisfactory action, and then collected up again in weeping tiles, as in the broad irrigation areas. Contact beds are always artificial in construction. They are made up of large concrete walled and bottomed beds, 6 feet or more in depth. The broken rock, slag, slate or other material is placed in these retaining basins, one bed to each basin. Sometimes the effluent is passed into these beds from bottom up, and at others, more satisfactorily fed from the top, as in the other beds.

Percolating beds are of the same construction as the last mentioned, but differ in their action in that the effluent is fed more sparcely and more continuously. It is usually fed through some sprinkling device. This breaks up the effluent very finely, passing the fine particles through the air, and thus intimately exposing the particles to free oxygen. Being fed sparcely it trickles down through the bed, being again exposed to free oxygen and to the bacteria sown surfaces of the stones. These bacteria are of strains which have distinct reducing properties. They also are antagonistic to the pathogenic bacteria contained in the effluent. The effluent emerging from these beds should be clear, odourless and nuisance free. If it is not it should be turned back through the beds again or if clear and odourless it may require only chlorinating to insure death of all pathogenic bacteria. In some places the effluent from the Imhoff tanks is chlorinated at once and not treated further. At this stage it is not odourless and may create a nuisance. Chlorinating after all is only attempted by intimate oxidation.

Cost per head for installation and maintenace—The cost of installation depends on the system of treatment installed The choice of system depends upon the closeness to centre of origin of sewage, that an available sight, of proper soil, area, relative elevation to that of centre of origin of sewage and value of land. Broad irrigation depends almost entirely on available suitable porous soil. The other three systems, being almost entirely artificial in construction, can be placed each of them in the same location, other things being favorable. The following table of comparative area required, cost of construction, cost of maintenace, etc., gives an approximate idea of the favorable features of the four systems. The basic figures for the calculations have been obtained from Kinnicutt, Winslow and Pratt's book on sewage disposal. The calculations are based on 100 gallons sewage per capita daily. The acreage per 1,000,000 gallons treated, is based on a 156,000,000 gallon plant, average of five people to the household.

The acreage per 1,000,000 gallons treated is based on a 156,000,000 gallon plant.

System Installed.	Broad Irrigation.	Intermittent Sand.	Contact Beds.	Percolating Beds.
Acreage per 156,000,000 gallons treated..	13,000	1,200	300	80
Acreage per household.....	.041666	.003846	.000961	.000256
	1/24	1/260	1/1040	1/3900
Cost of construction per acre.....	$1,500.00	$5,000.00	$35,000.00	$50,000.00
Cost of construction per household.....	$62.50	$19.23	$33.65	$12.82
Cost of maintenance per 1,000,000 gallons treated.....	.....	$24.91	$20.03	$15.50
Cost of maintenance per household per year (200,000 gallons per year).....	.....	$4.98	$4.00	$3.10
Cost of treating effluent per 1,000,000 gallons.....	.....	$2.43	$2.73	$1.50
Number of people accommodated per acre	500 to 1,000	1,200	5,000	10,000

Economic solution of disposition of domestic sewage, adapted to single building or units of buildings numbering up to 100.—In view of the comparative data furnished in the above table and having consideration of operation simplicity, as

well as cheapness of land, it strikes the writer that broad irrigation is the most feasible method for treatment of units of one to 100 houses. The area of sand or open soil would be five acres. Even clay land if handled properly, ashes and other suitable town refuse, being worked into soon becomes quite efficient (Journal Royal Sanitary Inst. Feb., 1913). Broad irrigation plants require scarcely any technical supervision. They have very few mishaps, any laborer being able to handle them year in and out. The effluent is fairly regular, usually being up to the standard suggested as necessary in the earlier part of the paper. The croping of the area in use, is practised, as also is the selling of sludge for fertilizer, but the profit is questionable. The entire equipment for the treatment would be:

1. Sewers from the place of origin of the sewage to treatment plant.

2. Imhoff tank and retention chamber to hold effluent, till automatically flushed onto beds.

3. Conveyers from retention chamber to different parts of beds.

4. Drying beds for sludge.

5. Broad irrigation beds.

6. Booster pump if plant cannot be operated by gravity.

The area of drying beds required for drying sludge is one cubic foot for every five people contributing. Imhoff tanks cost approximately $7,200 for every 1,000,000 gallons daily capacity, or $7.20 a household. The cost of operation is one man per 30,000 people contributing, or allowing $1,000 a year salary, it amounts to 5 cents per capita per day, or 25 cents a household.

Reasons for writer choosing this plan of treatment—This method of conveying the sewage to the Imhoff tank, drying the sludge for two days on drying beds and then burning as worked out by Dr. Amyot, conveying the effluent from drying beds and tank to broad irrigation beds, is favored, (1) owing to its lack of complicating features of construction and maintenance; (2) by automatic dumping box for effluent, it requires only a daily visit for supervision, lasting a few minutes, to be made at the most convenient time to the operator, simply to open valves to flood areas desired and shut off valves to areas sufficiently worked. (3) Sludge requires to be emptied only monthly, and in cold weather every six months. (4) All services for operation of plant necessary for population under discussion require only part of time of the caretaker, he being able to choose the most suitable hour. (5) This makes it feasible in small towns to assign the care of the plant to the person usually responsible for all municipal duties and constable as well. (6) Construction and repair is simple and within the power of local labor and mechanics. (7) Its simplicity, cheapness of construction and maintenance, make it feasible for the financially poor community.

In concluding the writer desires to state that he has confined his remarks to water carriage of domestic sewage and treatment of same in this state. In his experience, in small communities, it has been his lot to find this system carried on by individual houses, with aid of gasoline pumps supplying water pressure from wells, and in some blocks, incinera or privies and Parkyte closets working. The water carriage is very little more expensive, and gives numerous other advantages in domestic economy, not the least to mention being fire protection. The water carriage is always most sanitary and nuisance free. It has therefore been deemed unnecessary to discuss non-water carried sewage, owing to the incompleteness, insanitary working, usually nuisance creators, and seldom accommodating kitchen and laundry refuse water.

THE CARE OF THE TEETH OF SCHOOL CHILDREN IN GERMANY

By Prof. Dr. Dieck, Berlin.

There is no longer any doubt as to the necessity for the broad masses of the people of a systematic care of the teeth of children in schools. Statistics prove how terribly bad is the condition of the teeth among all civilized peoples, although

slight variations may exist. The general public is gradually becoming alive to the fact that the condition of the mouth is of great importance for the health of the individual, and thus also for that of the nation, and the consciousness that a vast amount of vigor and energy is lost by the consequences of bad teeth and an uncared for mouth is gradually spreading.

It has, however, also long been recognized that a universal disease such as caries of the teeth cannot be exterminated, or even mitigated, if the malady is cured only when it has reached an advanced stage. It is known that the trouble must be assailed at its roots with timely treatment, and, above all, that it must be counteracted by means of prophylactic measures.

When we inquire into the causes of the early and extensive destruction of the teeth of our youth we are faced with two considerations; in the first place, the lack of resisting power in the development of the teeth, which for the most part is traceable to inherited disposition, and in the second place the ailments to which the teeth are liable, and which are produced and intensified for want of systematic attention and of medical treatment.

The disposition to diseases of the teeth established by inheritance cannot, of course, be influenced, or at least can be influenced only to a slight extent. After the birth of the child, however, something can be done in order to promote the strongest possible development of the teeth. The healthier the child is and the more strongly its body develops the better the dental system will *certeris paribus* develop; everything that helps to strengthen the body helps, therefore, also to strengthen the teeth. The first important factor is the nourishment of the child with the mother's milk. The attention that should be paid to this matter is, unfortunately, not paid among civilized peoples at the expense of the child's body and its organs. Statistics have proved that in the same town those children which were nourished in the first year of their life with mother's milk suffered less from caries of the teeth than did those which were nourished otherwise.

Furthermore, an exceedingly bad habit, which is very widely spread among the lower classes in Germany, and perhaps also in other countries, must be specially emphasized and condemned, namely, the use of a small bag, filled with soaked biscuit and sugar, which is placed in the mouth of young children to pacify them. The milk teeth which have already appeared suffer the most from this, for it is an absolutely sure method of ruining the teeth. Starch and sugar, as is well known, find with the moisture and warmth and the innumerable bacteria of the mouth the most favourable opportunities for fermentation, and cause lactic acid to be produced, by means of which the teeth are decalcified. The opportunity not infrequently occurs of seeing quite young children of 2 to 3 years of age with the crowns of their milk teeth destroyed down to the gum by this means. And it is not only the untimely loss of the milk teeth themselves that is to be deplored, but the germs of the permanent teeth, which begin to develop in the first year of life, may become very seriously injured by purulent disease of the roots of the milk teeth. It is thus a matter of the utmost importance that the necessary precautions should be taken to keep the milk teeth healthy, if the later permanent teeth are to be benefited.

There is still an important factor to be mentioned. If the milk teeth are destroyed very early, and especially if the molars are ruined, the masticating pressure is lacking for years, and thus an important formative incentive to the growth of the jaw is wanting. It is not only the development of the size of the jawbones that suffer in this case, but also the development of the strength of the permanent teeth, and when the latter make their appearance later on they often do not find sufficient room, and their position is necessarily irregular and cramped. Such a set of teeth is much more liable to be attacked by caries than teeth which have sufficient space.

A systematic care of the teeth ought not, however, to be commenced when the child is already at school, but before it is old enough to go to school, for then many troubles can be guarded against which would otherwise show themselves later on during the school period. Endeavors in this direction have been made

in Germany, in that the teeth are attended to in many infant schools, orphanages, and hospitals for children. Professor Jessen, of Strassburg, the eminent promoter of the care of teeth of school children, has written and done much in the cause. This provision would, however, benefit only a small proportion of the children of the people. It is of the utmost importance that the parents should be instructed, and it seems to me that the school dental clinics can and should also gradually fulfil the task of examining and treating dentally the children who are not yet of an age to go to school, beginning with the younger brothers and sisters of the school children. By this means much good could be done prophylactically, and the later treatment in the school dental clinic would be prepared for and made easier. Such arrangements have been made by school dental clinics in Berlin as well as in Strassburg for the examination and treatment of the teeth of children attending infant schools.

In Germany we have arrived at the conviction that for the carrying out of the care of the teeth in schools the effective participation of the school itself is indispensable, on practical and general pedagogic grounds. The elementary school must include in its curriculum the necessity for the care of the mouth and teeth, and instruction concerning the deleterious effects produced by neglected teeth. This purpose would be served by means of instruction from the teacher, reading exercises in the school books, the preparation of compositions by the scholars on this subject, and of plastic model work. Experiments have been made in Berlin in this direction with satisfactory results; the school children learn to care for their teeth, to a certain extent as a school task.

The participation of the school is also of great advantage, as it carries with it the interest and support of the authorities; this is important, too, for it precludes the possibility of conflict with the educational authorities, which might possibly arise if there were a question of giving up school time for private treatment.

In Germany the endeavors to introduce a systematic care of the teeth of children in schools were first made many years ago. The general interest, especially that of the communes, was, however, formerly not sufficiently aroused, and therefore no funds were available, so that the beginnings of the dental treatment in schools were far from adequate to fulfil the requirements. Here and there the school children were treated gratuitously in a private polyclinic, for example, at Hanover. Then in some towns a lump sum was granted from the communal funds to private dentists, and this method is still in force in several places, though for various reasons it is not expedient:

1. The lump sum must become gradually larger, and too much for the communes to pay.

2. There will not be sufficient interest in carrying out the treatment well in each individual case.

3. It is disadvantageous when, as is inevitable with this procedure, the treatment is carried out at different places, and often by different dentists whose capabilities may not be always equal.

The broadest basis for practically carrying out the systematic care of the teeth of school children has been established by the creation of the "German Central Committee for the Care of Teeth in Schools," under the presidency of the ex-Minister Moeller.

Seeing that the Government takes a practical interest in the matter there is co-operation among:—

1. The State authorities, which not only lend their moral support, but directly promote the aims of the Committee. Directions are given by the Ministry to subordinate departments, which transmit them to the school authorities, to further the efforts to carry on the care of the teeth.

2. The communal authorities.

3. Doctors, in particular school doctors.

4. Dentists, and dental corporate bodies.

5. Private philanthropists.

6. Elementary school teachers.

The operation of the German Central Committee has been highly beneficial.

Experience has shown that for the establishment and maintenance of school dental clinics two forms come into question, which are dependent on the funds in hand and on the interest that has been

aroused in the communes for the care of the teeth of school children, namely:

1. Municipal school dental clinics with a paid staff. The head of the clinic is a municipal official entitled to a pension. The clinic is maintained absolutely by the commune. This is the best method.

2. School dental clinics, with communal support. The municipality places the requisite rooms at the disposal of the clinic.

The cost of fitting up the clinic in the first place is either borne by the municipality or is covered by private subscriptions. The current expenses are met by means of grants from the municipality, possibly also from the local Sick Insurance Societies, from the State Insurance, or from private persons, or by payments for work done. This payment can be made in three ways:

1. In the form of a trifling payment for single treatment, by those who can afford to pay something. This form is not to be recommended.

2. In the form of a contribution from the parents of 1 mark per year for each child.

3. By raising the school fees by 25 pfennige (three pence) for each quarter in communes where they are charged.

Experience has taught that the current expenses of a school dental clinic can be covered by a contribution of 1 mark per year for each child. In respect of the expense incurred in fitting up the clinic and in carrying it on, the following examples may be given:

The Cost of Fitting Up.

	Marks.	£
In Cologne	14,300	715
In Darmstadt	6,000	300
In Berlin (the 1st Clinic)	8,000	400

The Working Expenses Amount

In Cologne to	11,000	550
(Including salaries) ..	9,000	450
In Darmstadt to	7,400	370
(Including salaries) ..	5,400	270
In Berlin (1st Clinic) to	13,260	663
(Including salaries) ..	11,260	563

The Parliamentary session of 1912 has disclosed the fact that there is no serious opposition in the House of Commons to the raising of the age. Mr. Walter Rea's bill received numerical and influential support from all parts of the House, and the second reading was carried by an overwhelming majority. In Grand Committee a strong agricultural interest developed which was able to modify the Bill in favour of retaining the child laborer from the age of 12 for agricultural purposes only. On account of this amendment it became necessary for the Bill to go through Report stage, and three blocking motions were put down against its passage. The first was instigated by the National Union of Teachers, on the ground of differential treatment between urban and rural children, and the other two came from Lancashire members who represent constituencies where half-time labour is rampant. The first "block," standing in the name of Sir James Yoxall, was subsequently withdrawn, but the other two remained, and consequently the bill was dropped.

In the matter of the abolition of child-labour and the further education of youth which naturally follows, the Lancashire operative is blocking the way. He it is who is the fiercest opponent of progress, for he secures direct pecuniary advantage from the employment of the half-timer. In the ballot of the operatives he has declared emphatically on two occasions that he will have no abolition. The attitude of the cotton operative makes the average Lancashire member of Parliament afraid for his seat. But if he will carefully examine the ballot he will find that the great majority of operatives who are opposed to abolition belong to those sections of the cotton industry where young people aged from 13 to 21 are mostly employed, and upon further examination he will learn that they are mostly of that sex which has not yet secured the Parliamentary vote. So far as the textile districts of Yorkshire are concerned there is no fear of political disaster waiting upon the supporters of a Bill for entire abolition. The subject is rarely mentioned at election times. Speakers who are opposed to the half-time system are seldom challenged, and everything seems to point to a state of mind which is quite prepared for that which is apparently inevitable—the complete abolition of child-labour.

MEMORANDA OF SANATORIA IN TUBERCULOSIS WITH MOSTLY GERMAN DATA

By WILLIAM SEAGROVE MAGILL, A.M., M.D.

First Lieutenant M.R.C., U.S.A., Director of Laboratories New York State Department of Health.

The propoganda for sanatoria as a means to combat against the tuberculosis spread in the human race, really begins in Germany with the organization of the Central Committee for the Construction of Sanatoria, in 1895; but the predominant achievements in the creation of sanatoria for anti-tuberculosis work rests almost entirely with the use of the funds of the Government and insurance associations derived from assessments on the working classes of the country, of which the so-called "Kranken Kasse" and its supply the "Steuer" to that effect are institutions of the German Empire; and this use of these funds dates from 1899.

Previous to 1892, there was no sanatorium for anti-tubercular utilization, other than private institution, in all Germany. The first institution of the sort for use by the people, was that of Ruppershain, near Falkstein, erected in 1895, to which was soon added that of Dannenfeld, established by the great Anilin Works of Ludwigshafen, for the use of their employes.

At this period closing the century, there was the Marine Sanatorium for anti-tubercular effort, at Arcachon, in France, since 1891; but with no particular expansion of the movement in that country, until the efforts of the Anti-Tuberculosis League of France succeeded in securing expansion of such sanatoria, by securing the application thereto of the funds realized from the workingmen's insurance assessments, in 1899.

Returning to Germany, we find the workingmen themselves with their Hanoverian Workingmen's Association, founding the sanatorium at Konigsberg, near Goslar, in the Harz Mountains, in 1895; and a similar result of the like association of the Province of Brunswick, in 1897.

There were actually in function, in Germany, nine such sanatoria in 1899, when the new tuberculosis laws went into effect by which legislation it was made compulsory upon every working person over 16 years of age, with wages less than $600 per year, to pay into the so-called sickness fund (Kranken Kasse) a fixed amount of tax. The extent to which such tax was applied is shown by the fact that in 1910 there were, in the German Empire, 14,000,000 persons paying the tax.

With the possibility of establishing sanatoria with funds collected from the working people by this tax, the rapidity of establishment of such institutions in Germany was remarkable and is shown strikingly by the fact that there actually exist in the German Empire:

34 sanatoria, of private revenue, with 2,121 beds.
104 sanatoria of tax fund revenue, with 14,079 beds.

With the average duration of stay found in these institutions to be three months, it is seen that there is provision for the care of 56,000 persons per year in such sanatoria; and an idea of the extent of such provision is obtainable when it is realized that the cost of such patients in sanatoria as paid from the tax-gathered Workingmen's Fund, was $5,000,000—five millions of dollars—in 1911 alone.

It is to be remembered that workingmen's funds are collected only from persons over 16 years of age. There is no such revenue obtained from children and, consequently, no such tax collected funds available for the establishment and function of sanatoria for children, and, perhaps for that reason is it that there are few such institutional opportunities for children. To quote from a report on the situation in Germany: "Children are not in the class provided for by these funds, and are only cared for by the *philanthropic associations, which do not extend far.*"

In the beginning of their advocacy of the sanatorium to combat tuberculosis the Germans maintain that the climate had little to do with "cure" in such disease. It is said by some of their

French colleagues that as Germany had no assets of such "climate" they proceeded with proper spirit of the "Vaterland" to discover that none was requisite. However that may be, it is strikingly true that the conditions of climate of the German sanatoria, measured by the usual standards of salubrity for tuberculosis sufferers, are very poor.

A criticism—of perhaps unfriendly source, is made of many of the sanatoria erected in Germany; that they are built and equipped with an almost ostentatious luxury, and a cost that is quite out of proportion to their actual needs, and far greater than would justify the expenditure of the monies thus taken from the people's tax-gathered "Sickness Fund."

It is very certain that the heavy investments made from this fund in such sanatoria can only be justified by plainly established results of cure and prevention of this disease.

Thirty-eight such sanatoria, built from the workingmen's insurance funds in Germany cost $11,650,000, of which approximately, the buildings cost $10,000,000, the land costing in addition $600,000, and for the equipment of these institutions $1,150,000 was spent. In the foregoing 38 institutions are provided 3,149 beds for men and 1,314 beds for women; a total of 4,463 beds for $11,650,000 of sanatoria, a cost of $2,614 per bed available. Of all the sanatoria of Germany, there is scarcely to be found any, even when a made-over building, with slight sanitary improvement (plumbing), etc., is used, where the cost per bed does not run to $1,000, and there are some where the cost runs to even $4,000 per bed.

Before that sanatoria were advocated and resorted to, even in Germany, it was a well established and universally conceded fact that such mode of treatment "offered no real chance of cure, except to patients of very slightly advanced lesions" and good authorities are declaring that experience accentuates more and more the folly of admitting to such places any other class of patients for any purpose of cure. The actual admission practice for these sanatoria restricts the eligibility of entrance to only those cases, where alteration of the vesicular murmur, in one or both apices of the lungs is noted, but where there is *no fever, no general symptoms, no sign of any evolutive crisis.* In fact no patients are desired for admission here except those who are "tired" and in whom a later development of tuberculosis is to be feared. No patient is to be sent to such sanatorium unless all of his organs appear to be perfectly sound, his temperature is determined to be normal, and tests of his urine should prove the absence of albumin, sugar and give no diazo-reaction. For eligibility to admission here each patient must be of natural robust make-up, normal skeleton frame, with a breast measure in normal relation to their height. Of 2,018 admissions to such institution in Berlin, in 1910, a control examination shows that 1,513 (75 per cent.) were of the type just described, showing a very slight first degree of infection. Careful and repeated examinations of the sputa of all of these never succeeded in finding the bacilli of tuberculosis in more than 25 per cent. of the entrants (exact number was 519).

In former years, the German scheme of tuberculosis therapy centred upon the utilization of the sanatorium as a curative measure of first importance; the sanatorium treatment meant fresh air, supervised outdoor exercise and good food. These measures are still the invariables of treatment there, but to these the experience of the years now elapsed, in a realization of the failure of these measures alone to produce the hoped-for results, have added a far more varied and vigorous therapy. Light and sun baths are at present coming into extensive vogue, and the various sanatoria are found with the women exposed for hours, perhaps all their waking moments, in no other clothing than the lightest sort of union under suit, the men clad only in trunks such as are worn in the usual swimming pool.

Hydrotherapy in varied forms and periods of time is everywhere widely resorted to, and more and more attention is being paid to the diet of the patients. In general five meals a day are eaten, and medicines to keep the digestive tract in good activity may be resorted to; otherwise only simple medications are in vogue, except for the use of tuberculin in one of its forms, which is used in some 40 per cent. of all the patients, and this agent seems to be gaining in extent of its use and the appreciation of its value.

The period of time that has now passed in the trial of sanatoria in the matter of tubercular therapy, in Germany, has been sufficient and the number of patients thus experimented with has been sufficient to permit the deduction of some results and thus determine in a way the value of such measures. What they have cost has been shown; that only at the cost of tax collected funds from the working people has any amount of sanatoria activity been accomplished in that country is manifest. The poor people are paying, and heavily paying, of their forced taxed wages, for their own treatment in sanatoria, and such expenditures can not be justified unless it can be shown that the results, in cures and prevention fulfill the promises of salvation made to these poor people to secure the expenditures of their funds on such lines. In determining "results" it is necessary to define terms. What is meant by the "cure" in the sanatorium's sense? "Cure" in the sanatoria of Germany is taken to mean, not an anatomical cure, not as the word is used in a medical sense, but is, by those in authority there, defined "a person will be considered as cured *whenever able to take up work, and as long as he can work*, EVEN IF HIS LUNGS ARE RIDDLED WITH CAVERNS, and HIS SPUTA FULL OF TUBERCLE BACILLI, HE WILL BE *STILL CONSIDERED CURED*" (the punctuation and lettering of the quotation is that of the translator), quoting from a report of the condition and status of the sanatoria in Germany, just in print as made by unquestionable authority.

With a complete understanding then of what is meant by this word cure in such institutions, it is possible to consult statistical tables and from them to draw for oneself conclusions as to the results accomplished.

From the General Statistics Office of the Imperial Government, relating to the work of the General Insurance Associations, the following table is obtained, setting forth the expenses for treatment in sanatoria of the insured class.

Table I. showing per years, sexes, totals, etc., the cost of treatment in Sanatoria (tuberculosis):

Year.	No. Patients treated			Cost per annum in marks (Germany)
	Male.	Female.	Total	
1897...	2,598	736	3,334	1,024.507
1898...	3,806	1,104	4.910	1,546.759
1899...	6,032	1,666	7,698	2,401.657
1900...	8,442	2,652	11,094	3,765.163
1901...	10,812	3,844	14.656	5,034.797
1902...	12,187	4,302	16,489	5,885.615
1903...	14.937	5,211	20.148	7,409,490
1904...	16,957	6,520	23,477	8,474.281
1905...	19,085	7,536	26.621	9,679.535
1906...	21.959	9.063	31,022	11.483.034
1907...	22.258	9,816	32.074	11.886.092
1908...	26,437	12.288	38,725	14,806.099
1909...	29.277	12,955	42.232	16,303,618
1910...	30,595	15.014	45,609	17,416.030
14 yrs.	225,382	92,707	318,086	117.716,677

Table II., showing cost of treatment in above Sanatoria per diem (male and female) and cost of "Cure:"

Years	Per Diam Marks			"Cure" Cost per Person		
	Male	Female	Average	Male	Female	Average
1897..	4.05	4.04	4.05	295.24	349.83	307.29
1898..	4.20	4.12	4.18	307.50	340.95	315.02
1899..	4.25	4.03	4.20	310.31	318.04	311.98
1900..	4.78	4.00	4.57	345.13	321.12	339.39
1901..	4.82	4.03	4.20	348.58	329.34	343.53
1902..	4.89	4.19	4.69	360.20	341.43	355.30
1903..	5.04	4.23	4.84	373.84	350.30	367.75
1904..	5.01	4.10	4.75	373.91	327.28	360.96
1905..	5.20	4.09	4.87	380.31	321.29	363.61
1906..	5.39	4.04	4.96	389.01	324.47	370.16
1907..	5.46	4.09	5.00	388.30	330.40	370.58
1908..	5.68	4.34	5.22	402.20	339.61	382.34
1909..	5.77	4.29	5.41	404.22	344.97	386.05
1910..	5.75	4.25	5.22	404.36	336.00	381.86

From various reports, the average cost per diem of a patient is found, as above, a steadily rising figure from $1.00 per diem in 1897 to an actual cost in 1910 of $1.43 per diem; average of seven County Hospitals in New York, $1.50 in 1912; United States Public Health Tuberculosis Sanitorium, $1.61 in 1912; all of which would indicate that such cost must be considered as now passing over $1.50 per day and steadily rising.

A cost of "Cure" in the German sanatorium sense may be found from the fact that many such institutions find that a period of stay at least of 90 days' dura-

tion constitutes their average when "cures" are obtained.

The Hanseatic Insurance Associations report, however, a shorter period, making their average of stay for cures obtained a period of sixty days only, and reporting the average cost of "cure' as $121.00 per case.

It is important in determining the value of results to consider the proportion of "Cures" obtained, and the length of time the ability to earn a living is maintained. Remember in this connection from what a carefully stipulated degree of tubercular infection the patients are selected for admission and consult the following table:

Table III.—Development of capacity to work in patients treated in Sanatoria.

Years	No. Patients	(Results in %)	"Cured" Yr.	Able to Work at End of 1 yr.	2 yrs.	3 yrs.	4 yrs.	5 yrs
1905.	.26.621	82	77	64	56	50	46	43
1906.	..31.022	83	78	65	57	52		
1907.	..32.074	82	78	66	57	51		
1908.	..38.725	83	78	68				
1909.	..42.232	83	80	69				
1910.	..41.420	90						

It is to be noted that from this table is conclusively shown that of the very carefully selected eligibles for sanatorium treatment; of those considered "cured" in the mere sense of able to work; generally speaking only one-half of these are able to work at the end of three years.

A severe critic, but apparently backed with full data, states it is proven in Germany that "diminution of mortality in tuberculosis is not due to Sanatoria; but to the improved financial condition, well being and hygiene of its people" and the control proof of this statement is found in France where exactly the same diminished mortality, clinches the negative role of Sanatoria in producing the result, for in that country such institutions are not utilized as a means of attack or control of the tuberculosis invasion of the human race.

Editorial

To Tackle Social Problems.

The Toronto Globe recently commented editorially in these words:

"Mr. J. S. Woodsworth, who is very closely in touch with the social problems of Winnipeg through his work as Superintendent of the All-People's Mission, writes to the Canadian and British News urging the formation throughout the Dominion of a Canadian Welfare League, which would become a general clearing-house for organizations engaged in welfare work of every sort. Mr. Woodsworth believes that in the uplifting of humanity as well as in the lower level "the strength of the wolf is the pack.'

"There is need, he points out, for the closest possible co-operation so that social conditions, following upon immigration on a large scale, the rapid growth of the cities, and the rush to make money, may be so adjusted as to secure the common welfare through the personal service of the citizens. The existing organizations, such as Canadian Clubs, Industrial Bureaus, Civic Guilds, the Social Service Departments of the various churches would all greatly increase their influence by correlating their activities. The line of work in Mr. Woodsworth's mind is indicated by a reference to the situation in Winnipeg.

" 'Signs are not lacking,' he says, 'that in our larger centres, at least, there is a rapidly growing interest in the common good. Gradually organizations are being created, through which this new interest is finding expression. Already we have our Canadian Clubs, Town Planning Associations, Public Welfare Bureaus, Social Service Leagues, etc. Even the "booster" organizations are catching the new spirit. In Winnipeg, for instance, the Industrial Bureau has promoted the town planning idea, has advocated labor bureaus, has invented the Imperial re-union scheme, has arranged a course of vocational lectures in the schools, and is now establishing a central market. The bureau is now well housed in a fine building, which has become a real civic centre. Under its roof are gathered all kinds of community institutions, including a permament industrial exhibit, a scientific collection, and an art gallery.'

"Canada will, during the next quarter century—the formative period of her national life—require all the help of every citizen interested in the common good to prevent the evils that have hampered and oftentimes wrecked the nations of Europe."

Accepting this splendid opportunity offered we would like to point out that there is in existence now an Association which is virtually a Canadian Welfare League as suggested above. *The Canadian Public Health Association* was formed, and its inaugural meeting held, in Montreal, December, 1911, under the distinguished patronage of the Duke of Connaught and the Hon. R. L. Borden, Premier. It held a second meeting in Toronto, September, 1912, and its third annual meeting will be held in Regina, Sask., September, 1913. This Association has within its membership men and women of every profession, from coast to coast, who are interested in seeing that Canada shall possess a people stronger in mind and body than those of any other nation under the sun. The aims and ideals of *The Canadian Public Health Association* are as broad and far-reaching as the Laws of Health. Health is the state of being hale, sound or whole in body, mind and soul. It is to just such a broad programme as this that Mr. Woodsworth commends a Canadian Welfare League. We submit that *The Canadian Public Health Association* has taken to itself this very task and desires to co-operate with all those excellent agencies that are travelling towards the same goal as themselves. This Association has already a large, representative and influential membership. It will welcome many, many more. *The Public Health Journal*, with a circulation of several thousand, is the official organ of the Association and is designed as the medium of expression of the very principles suggested by Mr. Woodsworth and the Globe. We feel that this Journal has a unique mission to fulfil and we believe that we appeal to every man and woman who is

desirous of aiding in the uplifting of humanity. May we not, then, urge those who, like Mr. Woodsworth, believe in a general clearing-house for welfare work, to become intimately acquainted with *The Canadian Public Health Association* and *The Public Health Journal*.

The Ontario Health Officers' Association.

The Ontario Health Officers' Association which met on the 29th and 30th day of May, under the presidency of Dr. Adam Wright, was a decided success. The meeting was held in the Parliament Buildings and the only fault to be found was in the fact that the place of meeting was rather small, as it was scarcely expected that the number in attendance would be so great. This Association, the first meeting of which was held last year in connection with the Canadian Public Health Association, is composed of members of the Provincial Board of Health, the District Officiers of Health and the Medical Officiers of Health of the various municipalities in the Province. There are about 770 Medical Officiers of Health in Ontario, and by law they are required to attend this meeting. Their expenses are paid by the local municipalities.

Papers were presented under various headings such as: "The Duties of the Modern Medical Officer of Health in Cities and Towns" by Drs. Hastings and Dickinson. "Communicable Diseases" including smallpox and cross-infection in Isolation Hospitals.

A feature of the meeting was the paper of Professor Whipple of Harvard—"The Value of Vital Statistics in relation to Public Health." Which appears in this issue. It was discussed by R. E Mills of the City Health Department, Toronto.

Dr. Hodgetts' paper on Home Hygiene provoked considerable discussion. He contended that Medical Inspection of Schools, being part of Public Health work, should be placed under the Health Department and not under the Board of Education, as is the case in Toronto. He claimed that the present system caused duplication of work and a waste of public money. He also objected to nurses making a diagnosis of cases. The Association evidently agreed with his views, as the members passed a resolution to be sent to the Minister of Education, asking that medical inspection of schools be transferred to the control of the Provincial Board of Health.

The City of Toronto tendered a luncheon to the members on the first day of the meeting. Mayor Hocken presided and welcomed the visitors. Short addresses were given by Dr. Adam Wright, Dr. Hodgetts, Professor Whipple, Dr. Hastings, Dr. McCullough and Alderman Rowland, Chairman of the City Board of Health.

In the afternoon session Dr. Adam Wright gave a witty and instructive address, and Controller McCarthy on behalf of the Mayor gave an address of welcome. Dr. J. A. Amyot gave a public address to a large audience in the evening on the subject of "The Transmission of Communicable Disease." Motion pictures illustrating various phases of sanitary work were provided by the Provincial Board.

On the second day the question "Should the Medical Practitioner be paid for reporting Communicable Diseases, Births and Deaths?" started a lively discussion. The general opinion seemed to be that the medical man was entitled to some remuneration for this work, and a resolution was passed asking that the local municipalities be required to pay a fee of 50 cents for each birth and death and for each case of communicable disease reported.

Dr. Parfitt and Miss Eunice Dyke read papers on subjects relating to tuberculosis. There was a free discussion. The milk question was taken up by Drs. G. G. Nasmith and A. W. Macpherson. The "Question Drawer" was most interesting. Drs. Amyot and McCullough gave answers to a large number of practical questions.

After a luncheon in the Parliament Buildings short addresses were given by Archdeacon Cody and Hon. W. J. Hanna. The last session was taken up with papers on "Sanitary Work amongst Foreign Population" by Dr. C. N. Laurie. "Disposal of Waste and Garbage" by Dr. Hall, and "Disposal of Domestic Sewage" by Dr. R. E. Wodehouse, all of which were freely discussed.

Dr. C. J. Hastings, Medical Officer of Health for the City of Toronto, was elected President.

The Association meets annually.

Book Reviews

MODERN TREATMENT OF NERVOUS AND MENTAL DISEASES

This work will immediately arrest the attention of all those interested in any branch of social service, as well as the physician who finds that mental and nervous affections play a large part in his daily practice. There are two large volumes of 900 pages each, of which the first volume is now before us. When one realizes that insanity and idiocy are increasing faster proportionately than the population and that a very large percentage of the feeble-minded men and women are not properly cared for and procreate mentally deficient children, the great importance and timeliness of a work dealing with the problems involved in this situation become at once apparent. While these volumes go fully into the most modern phases of the issues under discussion, they devote a large amount of space to the broader question of prophylaxis, which is obviously the department where the greatest and most far-reaching results can be attained. This work marks a new departure in giving full consideration to such subjects as Eugenics and Hereditary in Nervous and Mental Diseases, Education, Treatment of the Feeble-Minded, Delinquency and Crime, Immigration and the Mixture of Races, and Alcoholism and the Alcoholic Psychoses. It then takes up the treatment of the various forms of nervous and mental diseases and discusses them conjointly, for the authors and editors regard the nervous system "as inclusive of the mind." It exhibits throughout the most modern point of view and the most advanced methods for handling these cases. It is of prime interest, not only to medical men, but also to hygienists, Government and municipal officials, legislators, military men, social welfare workers, charity organizations, and all those who have to do with the betterment of these unfortunate classes. This work therefore is not addressed to the medical practitioner alone. It is written for him principally, but it appeals to a wider audience. Besides those mentioned above, the educator, the judge and the lawyer, the student of the problems of criminology, of immigration and of dangerous trades, the hospital superintendent—these and intelligent laymen—all, in fact, who are cognizant of and desirous of furthering the solution of those large and important questions connected with nervous and mental hygiene—for such this work has been planned and completed.

This first volume is in every sense worthy of the greatest confidence. Its nineteen chapters are written by men who are in the very front rank in their special subjects, and these monographs are so related that one gets a broad vision of the needs of humanity and the methods necessary to meet these needs. Nothing like this has ever been projected heretofore. For example, Eugenics, Education, Sexual Problems, the Educational Treatment of the Feeble-Minded and Delinquency and Crime in Relation to Mental Defect and Disorder, have never before been placed in such close relationships, and as one reads one wonders why these subjects have been so long neglected as members of the same family.

Medicine has made very rapid progress even in the last decade, and along lines, such as are taken up in this volume, its progress has perhaps been greatest of all. A half century ago Lister did for surgery a service that is being increasingly recognized. Lister's work broke down prejudice in the minds of skeptical surgeons, and there are no skeptics to-day—in surgery. All are prepared to admit the scientific accuracy of his discoveries. In these last few years White and Jelliffe and their coadjutators have made discoveries no less wonderful in the realm of the nervous system. There is a scientific accuracy about dealing with delinquents in all spheres, and any reader of this first volume will discover how far we have travelled since the days when every mental defective was consigned to a "mad house." The classification of mental states and nervous diseases has changed so completely that a graduate in medicine of even fifteen years will not have even a bowing acquaintance unless he has kept himself abreast of the times through the work of such men as are the authors of this volume.

These monographs are of equal merit, but, of course, some chapters will appeal more especially to the educationist, the sociologist and the student of criminology, while all will appeal most directly to the medical practitioner and the special student of nervous and mental diseases.

Treatment is not the only thing discussed in reference to the many subjects presented. A thorough knowledge will be gained of each before treatment is mentioned, and yet treatment is the *raison d'etre* of the book. In this connection the authors say: "Here treatment remains the chief aim of the various chapters, but a wider discussion of the rationale enters as a desirable part. In neurology, pathological data are more generally applicable to the problems of therapeutics, hence it has been deemed of value to include more clinicopathological details in the discussion of these disease reactions. They permit a more liberal use of illustration than is possible in mental affections, in which disturbed conduct affords the criteria for clinical types. The introduction of this clinical and pathological material is of very distinct service, particularly in certain rarer affections in which new ground is being actively worked over. Even in the conditions more commonly encountered, we have considered it of advantage to present just enough clinical and pathological data to enable one who seeks help from these volumes to be quite certain of his diagnosis and, hence, able to pursue his therapeutic course with greater vigor and exactitude.

In order to insure this more definite guidance in treatment, all general chapters have been omitted. This course has been followed because of our conviction that chapters upon such general topics as massage, electricity, hydrotherapy, diateties, etc., tend to confuse rather than to sharpen the issues. The practitioner wants assistance in dealing with a definite pathological entity. It is of secondary value to know all of the various things for which a certain drug, form of gymnastics, kind of food, or electrical current may possibly be of some value."

Just at this time the problem of delinquency, the treatment of the feeble-minded and, in a broader sense, the relation of crime to disease of the mind and body are claiming the attention of the brightest intellects everywhere. It is evident therefore that this most important work should be in the hands of everyone who has to deal in any way with the welfare of the State and Society at large. The medical man, especially on account of his unique position as a primary observer in these matters, must see to it that he keep well in the van as an authority on these most vital questions.

This first volume is beautifully gotten up, and is replete with diagrams, drawings and plates. It will grace the shelves of any library, and it is certain that its possessor will find himself consulting its pages constantly.

MODERN TREATMENT OF NERVOUS AND MENTAL DISEASES. By eminent American and British authors. Edited by William A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington, and Smith Ely Jelliffe, A.M., M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System in the Post-Graduate Medical School and Hospital, New York.

Two octavo volumes, containing about 900 pages each, illustrated; per volume, cloth, $6.75 net. Lea & Febiger, publishers, Philadelphia and New York; D. T. McAinsh & Co., publishers, 4-12 College Street, Toronto, Ont.

FUR FARMING IN CANADA—WATER WORKS OF CANADA

Two volumes published by the Commission of Conservation of Canada, which is zealous in good works. Both these books are extremely valuable. The first makes intensely interesting reading and is beautifully illustrated; the second is a compilation of all the water works systems in all the provinces of Canada, and makes a handy book of reference.

OPEN AIR CRUSADERS

This is a little volume which describes the last of the Crusades and the greatest In many cities open-air schools are available for those children whose lives would be endangered by being confined within four walls. In summer the children study under the spreading leaves; in winter they

become little "Eskimos" and study in their comfy suits. This beautiful little volume, published by the Elizabeth McCormick Memorial Fund, describes the advances made in this important work. There is a world of truth in this "Schoolgram" taken from page 49, "What shall it profit a child if he gain the whole curriculum and lose his health?" There are other "schoolgrams" just as striking.

OPEN-AIR CRUSADERS. The Individuality of the Child versus the System, together with a report of the Elizabeth McCormick Open-Air Schools. By Sherman C. Kingsley, Director of the Elizabeth McCormick Memorial Fund.

Published at No. 315 Plymouth Court, Chicago, Ill.

PRIVATE DUTY NURSING

There have been many books published giving advice to nurses who may be engaged in private practice, but we question whether there is a better than this by Katharine DeWitt, R.N. It is not by any means a treatise on the technical side of the nurses' life, but deals with those things which a nurse will surely meet when she leaves the hospital walls and goes into private homes. She is here reminded of her attitude to the physician, to the family, to the patient, to the friends and neighbours, to the guests and to the servants in the home. She is told how she must carry out the work of her profession far away from the appliances and the conveniences of the hospital. She is advised about her conduct when she travels abroad with her patient. The volume is well gotten up and is written in a very readable style. It would be a good thing if a copy of this book could be placed in the hands of every nurse on her graduation day, as she steps from her years of training into the perhaps harder world of private duty, where there are many problems of which she has heard, but has yet to meet.

PRIVATE DUTY NURSING. By Katharine DeWitt, R.N., Graduate of Mount Holyoke Seminary and of the Illinois Training School for Nurses; Assistant Editor of the American Journal of Nursing.

J. B. Lippincott Company, Philadelphia, Montreal and London. Price $1.50 net.

THE STORY OF THE MUTUAL LIFE OF CANADA

A delightful little brochure with the above title has come to our desk, and it is a pleasure to record our appreciation. It is a fascinating tale of the growth of one of Canada's great Life Insurance Companies, from its establishment in the beautiful town of Waterloo in 1869 to the present, when the company is entering into a magnificent new office building, its third home. That which was started in small quarters, in a small town, with possibly fear and trembling on the part of its promoters, has grown to be a great and powerful factor in the financial world. Yet the ideals of the company has ever remained the same throughout the years. Mutuality has distinguished it from other companies, and this means that the policyholders are actually engaged in the business of insurance on the co-operative plan. The Town of Waterloo and the Mutual Life of Canada have helped each other during these long years, and their names cannot be disassociated, but this great Insurance Company belongs to Canada and Canadians are proud of its success. Everyone will be interested in reading this brochure, and it may be had for the asking.

Meetings and Reports

CANADIAN PUBLIC HEALTH ASSOCIATION.

Third Annual Congress, Regina.

CONVENERS OF COMMITTEES:

Local Arrangements.—Convener, M. M. Seymour, M.D., Commissioner of Public Health, Regina. Secretary, R. H. Murray, C. E. Engineer to the Bureau of Health, Regina.

Medical Officers of Health.—Arthur Wilson, M.D., Regina.

Medical Inspectors of Schools.—W. E. Struthers, M.D., Toronto. Local Convener, W. A. Thompson, M.D., Regina.

Military Hygiene.—Major T. B. Richardson, Toronto. Local Convener, Harry Morell, M.D., Regina.

Veterinary Hygiene.—J. B. Hollingsworth, D.V.S., Ottawa. Local Convener, D. S. Tamblyn, D.V.S., Regina.

Sanitary Inspector.—Thomas Watson, Regina.

Engineer.—L. A. Thornton, C.E., Regina.

Architects.—F. C. Clemesha, Regina.

Laboratory Workers.—C. H. Higgins, D.V.S., Ottawa. Local Convener, G. A. Charlton, M.D., Regina.

Hospitals and Charitable Institutions.—W. A. Dakin, M.D., Regina.

Social Worker.—Rev. W. W. Andrews, LL.D., Regina.

Local Ladies.—Mrs. R. Martin, Regina.

Papers.—M. M. Seymour, M.D., Regina.

Reception and Entertainments.—M. R. Bow, M.D., Regina.

Transportation.—B. F. O'Toole, Regina.

The Saskatchewan Medical Association.

On the 16th, 17th and 18th of July, in the City of Regina, the Saskatchewan Medical Association will hold their annual meeting, at which the officials hope to excel all previous records as regards attendance, the quality of work and the actual results obtained.

Not only do we urge upon you the importance of being present at the meeting to take part in the discussions, but also to contribute a paper, case report or medical exhibit.

The Executive Committee desires to impress upon every physician the fact that it will make special provision for the entertainment of physicians' wives and visiting ladies. The nature of this entertainment will be announced later, with the programme.

Kindly notify the secretary at the earliest date possible of the subject of your paper or contribution, not later than July 1st.

ARTHUR WILSON, Sec'y.
DR. D. LOW, President.

Regina.

Medical Council of Canada.

The next meeting of the Medical Council of Canada will be held in Ottawa on June 17th, and the four days following. At this meeting it is expected that the new register will be open to any who wish to take advantage of the Act which allows those who have been registered in any province in the Dominion prior to November 7, 1912, which was the date that this Act came into force. The gentlemen comprising this council are to be congratulated on their work in this connection. It will not be long before this Act will be taken as an example to create medical reciprocity throughout the Empire.

The annual meeting of the Canadian Medical Association under the presidency of Dr. McCallum will be held in London, June 25th, 26th, 27th and 28th. A very excellent programme has been arranged. Dr. L. F. Barker and Dr. Thos. Cullen, of Baltimore, will be among the visiting contributors.

The International Medical Congress.

Some further information may be given as to the International Congress, which will meet in London in August. In the

section of the history of medicine a wide interpretation has been given to the subject. In some cases the papers will be more or less of an anthropologic nature. A paper on the history of the relations of medicine and vivisection will be read by Mr. Stephen Paget, secretary of the Research Defense Society. That the artistic side of the subject will be well represented is shown by the following titles: "Relations between Art and the History of Medicine," Hollander; "Physiology of Vision and Impressionism in Art," Leonard Hill, and "Painting in Relation to the History of Medicine," Corsina. Sir Shirley Murphy has promised a paper on the origin and growth of public health legislation. Sir William Osler will give an illustrated lecture on the earliest printed medical books. Dr. Sambon will discuss the light thrown by the healing practices of animals and savage men on the study of primitive medicine.

In the section of psychiatry, over which Sir James Crichton-Browne will preside, Janet will discuss psychanalysis. Dr. Adolf Meyer will read a paper on the psychiatric clinic, its aims, educational and therapeutic, and the results obtained in the promotion of recovery. Morselli will discuss the psychology of crime.

In the section of anatomy Dr. C. U. Ariens-Kapper of Amsterdam will read a paper on cerebral circulation and the precise function of the furrows of the brain.

In the section of physiology there will be a debate on the correlation of the organs of internal secretions and their disturbances.

In the section of pathology shock is one of the subjects to be discussed, and there is a special subsection devoted to chemical pathology.

In the section of bacteriology and immunity among, the subjects to be discussed are theories of immunity and anaphylaxis, the nature of virulence, filter passers, leprosy and allied bacteria.

In the section of therapeutics there are many novelties, such as non-bacterial toxins and antitoxins, the comparative value of heart remedies, and thermal treatment.

In the section of surgery there will be a special subsection devoted to anesthesia, general and local, and recent methods, such as spinal analgesia, and there will be a discussion of recent special methods of general anesthesia. Yandell Henderson of New Haven, Conn., will contrast the immediate and after-effects of spinal and local analgesia with inhalation anesthesia, particularly with regard to shock. Post-operative shock will also come under review.

In the section of ophthalmology Carl von Hess of Wurzburg will read a paper on "Affections of the Eye Produced by Undue Exposure to Light."

In the section of hygiene and preventative medicine, the following subjects will be discussed: the effect of dust in producing diseases of the lungs, infant mortality in the first weeks of life, the factors that determine the rise, spread and severity of epidemic diseases, the supervision of the health of children between infancy and school age, and the causes, prevention and treatment of visual defects in school children.

In the section of naval and military medicine, the subjects are: hospital ships and transport of wounded, transport of wounded in hill warfare, water-supplies in the field, antityphoid inoculation, sanitary organization in the tropics, caisson disease and the physiology of physical training and marching. In the section of tropical medicine and hygiene the subjects to be discussed are plague, beriberi, leishmaniasis and relapsing fevers.

Sex Hygiene to be Discussed by Distinguished Speakers at the International School Congress in Buffalo.

At the invitation of the Executive Committee of the Fourth International Congress on School Hygiene, which assembles in Buffalo, New York, on August 25, the American Federation for sex hygiene has assumed charge of a special meeting, on the afternoon of Wednesday, August 27, for discussion of sex education. Various phases of the subject will be considered, including its general aspects and practical aspects and practical suggestions for instruction.

Popular interest in sex education is of recent growth, according to a statement prepared by the American Federation, which continues: "Only a few years ago, the subject was a forbidden one, not to be mentioned in public and to be avoided whenever possible in private. But a gen-

eral realization of its importance has been brought about by the work of physicians and educators who have understood the real meaning and the actual results of the old policy of silence, and the extent of the present popular interest in sex matters is plainly indicated not only by the number of public lectures on the subject, but by the fact that the columns of the press are being more and more opened to its discussions.

"This popular awakening is due more than to any other one cause to the work of the late Dr. Prince A. Morrow. Early in his professional career, Dr. Morrow's interest was seized by the alarming extent and tragic results of venereal disease. His interest was not satisfied by scientific study of these diseases and their results, nor by the writing of learned papers, nor by the publication of his book "Marriage and the Social Diseases," which still stands as the most authoritative non-technical work on the subject. He felt the need of an awakened public interest in sex hygiene, and with characteristic courage entered upon a campaign of education at a time when the public discussion of the subjects in which he was interested was considered almost scandalous. Through his efforts, in 1905, a society of sanitary and moral prophylaxis was organized in New York City, as he himself said, 'by a handful of half-hearted men.' From an original twenty-five, the membership of this society has grown to nearly two thousand, and about thirty societies for sex education and like purposes have been organized throughout the United States. Yet when Dr. Morrow died, in March, 1913, he felt that the work which he had planned was only in its beginning."

In order that these local organizations might work in co-operation, and to give direction to the movement for sex education, the American Federation for Sex Hygiene was organized in 1910, and after a careful preliminary study of its field of activities, was incorporated under the laws of the State of New York in July, 1912. Its purposes have been formulated as follows:

"To educate in the physiology and hygiene of sex and to study and apply every means, educational, sanitary, moral and legislative, for the prevention of vice and its disease; to bring into closer relations the societies throughout the country for sex education and like purposes, and to secure co-operation among them."

The work of the Federation is designed to be primarily educational. This does not mean that it plans to attempt school education, but that it is making a broad application of the word "education." The recommendation and distributions of good literature on sex subjects is a part of its work. To this end, it is preparing bibliographies of approved books, issued by various publishers, not only on sex education, but on such related subjects as eugenics, the social evil, the moral training of the child, and the like. It plans to establish or promote public lectures and is even now co-operation with New York University in a course of lectures on sex education to be given during the coming university year.

The establishment of courses of sex instruction for teachers in universities, colleges, and normal schools, and the preparation of suitable books for school use are parts of its proposed work. Co-operation, not only with organizations whose special aims are like its own, but with medical associations, federations of clubs and of churches, and the like, is being successfully undertaken, notably in Chicago, where it is working in harmony with the Federated Churches, the American Medical Association, and the Federation of Women's Clubs.

The question of school instruction in sex hygiene is so important and one in regard to which educators are so little in accord that the Federation recently caused to be made an expert study of the question, through a committee composed of Dr. Thomas M. Balliet, Dean of the School of Pedagogy, New York University; Maurice A. Bobelow, Professor of Biology, Teachers' College, Columbia University, and the late Dr. Prince A. Morrow. The report of this committee has been given wide circulation and has been received with general approval. It takes a conservative position in reference to the introduction of sex education as such into Public Schools, favors the use of nature study and biology as a medium for sex instruction, opposes teaching in the schools by sex specialists, urges the proper training of all teachers in sex hygiene, and emphasizes the moral and religious aspects of

sex questions. Copies of this report may be had upon application at the Federation office at 105 West Fourteenth Street, New York City.

For the Congress meeting in Buffalo, acceptances have already been received from the following speakers: Dr. Charles W. Eliot, President Emeritus of Harvard University; Professor Thomas M. Balliet, Dean of the School of Pedagogy, New York University; President William T. Foster, of Reed College, Portland, Oregon, and the Honorable Philander P. Claxton, U.S. Commissioner of Education.

The Federation will also present at the Congress on School Hygiene its remarkable exhibit on sex education, eugenics, and the venereal diseases. This was first shown in Washington, D.C., in the fall of 1912, in connection with the Fifteen International Congress on Hygiene and Demography, and attracted more attention and comment than any other one of the numerous exhibits on that occasion. Even its critics, who felt that it presented some phases of the subject too frankly and with too little regard to the feelings of its visitors, admitted the force and scope of this exhibit.

Dr. Eliot will also serve as president to the General Congress to be held at Buffalo. The Secretary General is Dr. Thomas A. Storey, of the College of the City of New York.

School Hygiene Programme.

The preliminary announcement issued by the Programme Committee of the Fourth International Congress on School Hygiene, shows a list of 250 papers by speakers of national and international note, and twelve or more general discussions under the direction of national organizations, as features of the session to be held at Buffalo the last week in August. The speakers include many of the leading educators, physicians and scientists of the day, and according to plans now on foot the gathering at Buffalo gives promise of being the most elaborate effort ever made in this country towards getting the problems of school hygiene before the world.

Special discussions are being arranged on the following subjects:

School Hygiene—Arranged by the Committee on School Feeding of the American Home Economic Society.

Oral Hygiene—Arranged by National Mouth Hygiene Association.

Sex Hygiene—Arranged by the American Federation of Sex Hygiene.

Mental Hygiene—Arranged by the National Committee on Mental Hygiene.

Conservation of Vision in School Children—Arranged by the Society for the prevention of Blindness.

Health Supervisions of University Students—Arranged by Dr. Mazyck P. Ravenel, University of Wisconsin.

School Illumination—Arranged by the Society of Illuminating Engineers.

Relation Between Physical Education and School Hygiene—Arranged by the American Physical Education Association.

Tuberculosis Among School Children—Arranged by the Society for the prevention of Tuberculosis.

Physical Education and College Hygiene—Arranged by the Society of Directors of Physical Education in Colleges.

The Binet-Simon Test—Arranged by Professor Lewis Madison Terman, Stanford University.

The Mentally Defective Child—Arranged by Dr. Henry H. Goddard, Vineland, N.J.

In the 250 contributors to the programme are college Presidents and Professors; State, City , and County Commissioners of Education; Teachers of Public Schools; Medical College Professors; State, County and City Health Officers; physicians in private practice, engineers, and architects.

Forecast and Review

Alcohol in the Austro-Hungarian Army.

The present unsettled political conditions in Europe have resulted in a large number of soldiers being kept in readiness for more than half a year, and the provisions for hygienic welfare of several hundred thousand men are being put to a crucial test just now. A fact worthy of notice is the nearly complete absence of alcohol from the regimen or daily bill of fare of the soldiers on the frontier. The water-supply in that country being none too good, care has been taken to instruct the soldiers in this respect, and they are being constantly told that the old statement, "bad water is made innocuous by alcohol," is a dangerous misrepresentation. It has also been ascertained that whenever a period of endurance was required of the soldiers those who took no alcohol were much more fit for work than the other men. Only when a rapid but short strain was necessary a little alcohol might be beneficial or at least harmless. In mountain climbing, the consumption of alcoholic beverages was distinctly detrimental to the accuracy of stepping. The effect of sweetened liquid (sweet tea, coffee, milk or sweet mild wine) was very gratifying. The wine mentioned here is the black Italian or Turkish wine, with a very low percentage of alcohol. But even this beverage was disallowed when longer exercises were taken. The experiences obtained by the army authorities will no doubt lead to a complete elimination of alcohol as "war rations" except as a stimulant and for purely therapeutic measures, although here also experience speaks at least not in favor of an addition of alcohol for pneumonia, typhoid and general debility. It is also noted that total abstainers form a negligible fraction among those soldiers who have to be punished for disorderly conduct, breach of discipline or other minor offenses of a military nature, although total abstention is frequent now in the rank and file of the army. In the anti-alcohol movement in Europe, our army is one of the leaders.

An Early Reference to Infection Carriers.

That healthy persons may be carriers of infection by the persistence and proliferation of the casual germs in the healthy human body has been known for fifteen or twenty years. The possibility of this kind of carrier of infection does not seem to have been at all familiar to our forefathers, and yet the conception seems to be expressed quite clearly by Richard Mead, the father of quarantine, when he says: "If there be any contagious distemper in the ship: the sound men should leave their cloaths, which should be burnt; the men washed and shaved; and having fresh cloaths should stay in Lazaretto thirty to forty days. The reason for this is, because persons may be recovered from a disease themselves and yet retain matter of infection about them a considerable time." In these words is expressed a truth the significance of which was not clearly grasped until nearly two hundred years after they were written. Richard Mead is the author also of the following dictum which, besides its general application, has a very special meaning for the typhoid carrier: "As nastiness is a great source of infection, so cleanliness is the greatest preventive."

Dentists Aiding In Plans For Big Health Congress.

In response to an invitation issued by the committee organizing the Fourth International Congress on School Hygiene, the various dental associations of America are taking an active part in the plans for this health congress, which will be held at Buffalo the last week in August for the purpose of considering all questions relating to the health and efficiency of school children.

Dental inspection in the Public schools is one of the measures advocated by many of the leading dental associations of the country. Dental clinics have already been established in a number of the prominent cities, but the need of extending this work is clearly apparent, according to statistics furnished by health officers as well

as school officials. A current bulletin issued by the New York City Department of Health, points out the conditions in that city. The department announces the opening of six dental clinics for school children. These clinics are maintained in connection with those already established, which have for the past year provided medical and surgical treatment for diseases of the eye, the nose and the throat. The budget schedule for 1913 makes provision for the employment of one supervising dentist and nine staff dentists. These dentists are now on duty. Since the department inaugurated the physical examination of children in Public schools, according to the bulletin, it has been increasingly evident that dental defects are not only more prevalent than other physical defects, but that the facilities for free dental treatment are absolutely inadequate to provide any relief for the situation. Approximately sixty per cent. of all the children examined have been found to have decayed teeth. In other words, there are to-day 420,000 Public school children in New York alone in urgent need of dental treatment,—statistics which seem to bear on the statement made by Dr. Luther H. Gulick, who estimated that 40 per cent. of the absences in New York City were due to toothache.

Similar conditions, showing the need of dental treatment are reported throughout the country, and with a view of having these conditions remedied, the various dental associations are now lending their aid in behalf of the Buffalo Congress. A special session will be devoted at Buffalo to a discussion on mouth hygiene, dental clinics and other matters relating to school boys and their toothaches. The exhibits of this particular division will include, among other things, the motion picture film, entitled "Toothache."

The committee in charge of the mouth hygiene division of the Buffalo Congress is made up as follows:—Dr. W. G. Ebersole, secretary and treasurer of the National Mouth Hygiene Association, Cleveland, Ohio; Dr. Alfred C. Fones, chairman of the Oral Hygiene Committee of the National Dental Association, Bridgeport, Connecticut; Dr. J. O. McCall, chairman of the National Committee, representing the National Mouth Hygiene Association, Buffalo, New York; Dr. Henry H. Schuhmann, Chicago, Illinois; Dr. John P. Corley, Sewanee, Tennessee; Dr. T. W. McFadden, Wilkinsburg, Pa.; Dr. John H. London, Washington, D.C.; Dr. F. A. Ballachey, Buffalo, New York. This committee has secured the formation of sub-committees in the various states, and it is expected that all the leading cities will be represented on the dental program at Buffalo the last week in August.

The Diet in Diabetes.

At the recent International Physiotherapy Congress von Noorden discussed the principles for modern dietetic treatment of diabetes with exact details. In conclusion he emphasized that no other chronic disease is so much under our control as diabetes, aside from the unconditionally malignant and very far-advanced cases. He deplores that it so often happens that systematic treatment is not considered necessary in the early stages, and much time is wasted and the disease allowed to progress to a severe form by inadequate measures. Some rely on courses of mineral waters at spas, trusting to them to bring absolution for the dietetic sins of the home life; some waste time and money on quacks, patent medicines, and the so-called anti-diabetic specialties advertised in such profusion. At best, these proprietaries are harmless drugs sold with directions for strict regulation of the diet. The proprietary medicine with its alleged miraculous powers is only the business appendix; the active factor is the regulation of the diet. The patient's physician may not have ventured to impose such stringent dietetic restrictions, but the quacks do not hesitate to insist on them, and with disastrous audacity in many case. He reaffirms the importance of beginning an energetic individualizing dietetic treatment of diabetes in the early stages of the disease. This is the time when, according to the patient's regulation of his diet, all may yet be won and all may be lost. When this principle is universally recognized it will be appreciated that the prognosis of diabetes is much more favorable than that of any other chronic disease, and we will rarely encounter it in a severe form.

Necessity of Vital Statistics.

The earnest, intelligent health officer relies on statistics for an understanding of his field. A tax collector cannot discharge his duties unless he knows the address of every debtor. A police bureau cannot protect society unless it knows the character and haunts of the degenerates. A health officer cannot execute the law for the protection of society's health unless he knows the haunts and habits of disease. For this he must look to vital statistics.—Dr. William H. Allen.

A New Milk Modification.

Heim and John have used what they call casein-fat milk for the feeding of both healthy and dyspeptic infants. In 145 cases of dyspepsia it gave excellent results. They fed forty-five healthy infants with it from the age of two weeks to seven or eight months. All were evidently in as good condition as if they had been fed with mother's milk. The casein-fat milk is prepared by adding two teaspoonfuls of extract of rennet to two-thirds of a liter of cow's milk and heating it in hot water to 40 C. The coagulated milk is stirred up and poured in a fine sieve and the whey allowed to drain off. Two-thirds of a liter of hot water is added to the coagulated part and it is rubbed through the sieve. This process is repeated until the fluid has the consistency of milk and runs through the sieve without rubbing. It is then heated to not over 88 C. being stirred continuously to avoid coagulation of the casein. After heating, one-third liter of cow's milk, which has been heated, and 30 gm. Soxhlet's sugar is added, and it is kept in the refrigerator until wanted. It has the advantage over albumin milk or protein milk of being cheaper, and it can be prepared at home by mothers of ordinary intelligence.

Established Methods in Sanitation.

The Bulletin of the Florida Board of Health says that it is an easy matter to follow in the wake of public clamor against imagined menaces to public health, but that it is not sound wisdom to recommend anything either to protect life or to preserve health on speculative theory or possibility. When deviation is made from this course, the sanitation is getting into deep water. Sooner or later a reversal of judgment follows, and the public, it is said, then begins to doubt whether the sanitarians really know what they are talking about. To play to the galleries of popular approval on the ground of progressive sanitation is really a hindrance to the advance of preventive medicine, and sooner or later reacts and brings discredit on the person or the board recommending it.

Home for Public Health Association.

A committee consisting of Drs. John M. Lee, Montgomery E. Leary and Henry T. Williams has purchased the Robey Homestead, Rochester, for a home for the Rochester Public Health Association, at a cost of $12,000.

Are the Seasons Changing,

The belief of many people that the seasons are undergoing some kind of change has led Professor Ignazio Galli to examine the weather records of the entire eighteenth century. They show fifty-one winters that lasted well into spring, thirty-one warm winters, thirteen unusually early winters, twelve mild winters followed by cold springs, eleven mild winters followed by mild springs, eleven cold autumns, eight very warm springs, eight summers with frosts, and five very warm autumns. There was one instance of six consecutive warm seasons. More than three-quarters of the periods of unusual weather occurred between the middle of autumn and the end of spring. Many times during the eighteenth century, the same apparent anomalies recurred at the same seasons in several successive years; in every case, the seasons regained their normal characteristics. There have always been persons who imagined that the seasons were becoming warmer or colder than before. There is, however, small foundation for such beliefs; the world has indeed experienced many cold summers and many warm winters, but such seasons are not the rule, but the exception.—Youth's Companion.

Health Bulletins, Toronto.

Every summer the various bodies of water in the vicinity of Toronto and at summer resorts claim a large number of our young people.

One seldom picks up a morning paper after the 1st of June without seeing an account of one or more deaths from drowning. Occasionally these are unavoidable accidents, but are for the most part preventable, and many times the result of carelessness.

No one should enter a canoe who cannot swim! No one who can swim should take a companion in a canoe who cannot swim, as in the event of an accident, the swimmer is likely to be pulled under in his endeavor to save his companion.

There is no excuse for not knowing how to swim in a city like Toronto. It should be an essential part of every child's education. However, the swimmer is not always safe. Before leaving for your summer outing, if you are going to be in the water, have you heart examined. The majority of cases of so-called "cramps," is heart failure, resulting from the extra tax put upon the heart by the contraction of the superficial blood vessels through exposure to very cold water, to a prolonged stay in the water, or to over-exertion.

It is not, however, absolutely necessary to know how to swim in order to keep from drowning. It has been estimated that the human body in water weighs only from one to five pounds, so that a small board, or even an oar or paddle with one finger resting on it, could keep the body floating, if one could only keep a cool head and breathe regularly with the mouth closed.

In the event of drowning, don't lose a minute in rescuing the body from the water, and always try to restore life. Ten minutes under water is usually given as the limit, yet people have been resuscitated after a half-hour or more. Begin operations immediately after the body is taken from the water. Lay the body face downwards, with the stomach resting on a roll of clothing, a log or a barrel, with the head lower than the rest of the body, so that the water may run out from the throat and lungs. Clean the mouth of all mucous with a corner of a handkerchief wound around the finger; keep the jaws separated with a stick, around which is wrapped a piece of cloth; keep the face exposed to the air, and promptly and untiringly use some method of artificial respiration.

The Chafer Method as used by the Royal Life Saving Association is probably the most simple and least fatiguing, and can be performed by one person. Most important, however, whatever method you use, is not to give up too soon. There should be no relaxing for at least two hours, as at any moment up to that period signs of recovery may occur.

Heat should be applied to the body at the earliest possible moment, and as soon as the patient can swallow, give stimulant of hot coffee, milk, liquor or ginger tea. Be sure the patient can swallow before attempting to give any fluids.

Child Welfare in Winnipeg.

The department has added to its staff two nurses who will devote their time to child welfare. These appointments mark an important step forward in their work. The infant mortality of Winnipeg is higher than it should be, and the only reason it is so is because not enough effort has been put forth to lower it. They are going to get into the fight energetically this summer. Their nurses will help and teach mothers and improve the surroundings of babies. The department proposes to conduct an educational campaign by every means in its power. They feel sure that they have the sympathy and support of every citizen in this cause.

A Good Principle to Apply.

"No physician has a right to employ any uncertain remedy in the treatment of disease in human beings until he knows all that anybody knows concerning its composition, character and action." This, from the leading editorial in a recent issue of American Medicine, expresses just what The Journal has believed and said for years and what The Journal has never expressed better. The sentiment

occurs in a discussion of Friedmann's remedy for tuberculosis, but evidently it is meant to have a general application. Reasoning from this basis, one might be surprised to find in the advertsing pages of the same issue of American Medicine such products as Phenalgine, Sanmetto, Bannerman's Consumption Cure, Campho-Phenique, Anasarcin, Sal Hepatica, Phenol-Sodique, etc. All of these are "uncertain and possibly dangerous" remedies; does the editor feel that "he knows all that anybody knows" concerning their "composition, character and action?" If so, how much does anybody know concerning these things? This, at least, can be said: The Journal has given much valuable and accurate information concerning the "composition" and "character" of many of the preparations advertised in American Medicine. But, unfortunately, that journal has not seen fit to pass this information on to its readers. Why?—Journal A.M.A.

Rural Sanitation.

Dr. Charles A. Mohr, Mobile: The first step to raise the country to a higher sanitary plane is the education of the people. The teachers are logically the persons who understand the principles and questions involved, and first among these are the legal guardians of the public health, the doctors of the organized profession. Every intelligent man and woman who is informed on this subject is a competent teacher and should be a helper, and that there are many such is common knowledge. Education is so much needed that as many teachers are required as can possibly be obtained. The fundamental principles of communal hygiene and sanitation are contained in the following topics, everyone of which is an important factor in rural sanitation: 1. Collection of vital and mortuary statistics. 2. Reports of the occurrence of communicable diseases. 3. The fly as a disseminator of disease and its extermination. 4. The mosquito, the essential factor of the spread of malaria and the extermination of the insect. 5. Garbage, collection and disposal. 6. Water supply, care and service. 7. Sewerage, and the care and disposal of night-soil. Whatever the duty of the individual, the town authorities and the county authorities must be made to realize that they must part with some of their money in the interests of the public health. If public health is a purchasable commodity, these authorities must be made to pay for some of it.

Medical Inspection of Schools.

Medical inspection ought to emphasize in a decided way the especial significance of hygienic conditions in schools. It seems more than foolish to shut up our well children in unventilated and improperly lighted school rooms; furnish them no playgrounds, compel them to live a life not in accord with the laws of physical development, and then when they become anemic, near-sighted and defective make a great stir about special classes for defectives and spend in building special schools money better spent in keeping children well. We must learn that it is far more improtant to furnish conditions which promote the health and development of well children than it is to make special efforts to care for those who are sick or defective, especially where these defects have been largely induced through neglect.—Public Health, Michigan.

The Waste of Inadequate Support of Health Departments.

It costs the people of Kentucky about five millions of dollars every year to maintain their county organizations to look after the observance of statute laws. They pay willingly about the same amount to support their ministers, their churches, etc., to maintain the spiritual laws, and yet in most counties of the state there is less than seventy-five dollars spent each year to support county boards of health which, properly equipped at a cost not exceeding five thousand dollars for each county, would save them enough money, paid as tax to doctors, druggists, nurses, and undertakers and loss of time, to pay all the running expenses of their counties and the state, besides saving them from the mental and physical distress of unnecessary illness.—W. L. Heizer, in Kentucky Medical Journal.

The Friedmann Treatment for Tuberculosis.

(A report on the present status of its investigation by a board of officers of the Public Health Service.)

In November, 1912, Dr. F. F. Friedmann, of Berlin, reported before the Medical Society a new method of treatment for tuberculosis, consisting of injections with what he described as living, avirulent tubercle bacilli. In the discussion following his paper a number of scientists, whose opinion was regarded as carrying weight, supported in greater or less degree his contentions that curative effects were derived from this method of treatment. On theoretical grounds, the treatment of tuberculosis by living, avirulent tubercle bacilli, if such could be secured, had been regarded as the most hopeful line along which work could be carried, and for this reason, and because of the measure of support which had been given to Dr. Friedmann's methods, the interest of the Public Health Service was attracted to the subject.

The number and source of inquiries received from the most diverse parts of the country showed that this interest was being widely shared and, to a large extent, had been stimulated by widespread publicity through newspapers and other publications.

It being one of the duties of the Public Health Service to investigate the diseases of man and their methods of control, correspondence was entered into through the Department of State to ascertain whether Dr. Friedmann would submit details of preparation and administration of his remedy and its effects on patients to representatives of the Public Health Service; and if so, under what conditions.

In correspondence, Dr. Friedmann expressed a willingness to place at the disposal of such investigators all the facts at his command and afford them every aid to prepare a "comprehensive and impartial report."

Before arrangements could be completed to send an officer to Berlin advices were received through the State Department that Dr. Friedmann was preparing to transfer his activities to the United States, and notification of the date of his sailing was received through the same source. Preparations were accordingly made to meet Dr. Friedmann on his arrival with a view to taking advantage of his expressed willingness to have an investigation made of his remedy; and a Board was appointed, consisting of Surg. John F. Anderson and Passed Asst. Surg. Arthur M. Stimson, to carry on the work.

At its first interview with Dr. Friedmann the Board ascertained that he was not willing to reveal all the details of his methods, contrary to the offer contained in his previous correspondence. He willingly furnished a culture of the organism, however, which he stated was used in the preparation of his remedy, but declined to divulge the method of its use in the preparation of the remedy, and he would not make any definite statement as to the antecedents of the culture in question. He imposed, as a condition to finally furnishing detailed information regarding the methods of preparation of his remedy, a recognition by the Board of favorable results from the use of the remedy on patients. He specifically disclaimed that his culture was possessed of either curative or immunizing properties against tuberculosis in the lower animals, but had no objection to an investigation of his claim that it was completely avirulent to them. He agreed to administer the remedy to patients for purposes of observation by us of its effect upon them and to give them such subsequent treatments as, in his opinion, were necessary to effect a cure.

The Board, in effect, found that under the conditions mentioned it would have opportunity only to study a culture of the bacteria said to be used in some way by Dr. Friedmann in the preparation of his treatment, to test its pathogenicity on the lower animals, and to observe the effect of treatment by him of tuberculous patients with his finished remedy.

It will be recognized, of course, that such an arrangement was not satisfactory from a scientific standpoint; but, in view of the great importance of the matter to tuberculous patients throughout the country and in the hope that a valuable remedy might have at last been found, not only to cure tuberculous patients, but to prevent

the disease, the conditions imposed by Dr. Friedmann were accepted. An additional reason for taking advantage of opportunities to make every study possible was the assurance, by Dr. Friedmann, of its harmlessness when injected into human beings.

Arrangements were accordingly made with the staffs of Mount Sinai Hospital, Bellevue Hospital, the Montefiore Home, and Seton Hospital, whereby patients would be placed at the disposal of Dr. Friedmann for purposes of treatment. The thorough co-operation of these authorities has been had during the course of the observations, and it is a pleasure to acknowledge publicly their great courtesy. Practically all the patients in question had, for some time, been resident in these hospitals, were under the care of their visiting staffs, and our observations were made conjointly with those authorities; and, with their valuable assistance, the investigations have been undertaken and conducted in an impartial manner. The reticence and attitude of Dr. Friedmann have in no way been allowed to interfere with our judgment of the effects as observed by us.

Considerable delay has been experienced in the treatment of cases on account of the repeated absence of Dr. Friedmann from New York, the first patients having received their first injection March 9 and the last of them their first treatment April 6. In all, 94 patients had received the first injection up to April 15, when it became necessary to inform Dr. Friedmann that on account of the halting progress in the demonstration the Board was forced to limit its studies to these patients. Dr. Friedmann was also informed that in the interest of the demonstration these patients should be seen by him with a view of giving such additional injections of his remedy as might, in his judgment, be necessary to effect a cure. Up to the present time five of these patients have received a second injection.

On account of the enormous number of inquiries regarding the remedy, and the statements in newspapers purporting to be expressions of opinion of the Board of officers as to its value, a statement was made in the Public Health Reports on March 21, 1913, to the effect that considerable time would necessarily be required to carry out the investigations; that no opinion had been expressed one way or the other, and that in the meantime the public was informed of the inadvisability of tuberculosis patients travelling long distances in the hope of receiving the treatment. This latter information was furnished on account of the hardships and disappointments suffered by those who had travelled to New York in the hope of receiving treatment.

We believe that at the present time we are not in a position to express an opinion based on the present condition of patients under observation. The disease for which the remedy is used is prolonged, and is characterized by periods of advancement and retrogression; it is also one in which psychic influences are a powerful factor. Time is, therefore, necessary in order to properly evaluate the effect of therapeutic measures.

We must not lose sight of the possible therapeutic value of this preparation, and, on the other hand, it is necessary to guard against too great an optimism in respect to its merits. Without presenting in detail the condition of patients under observation we are in a position to state that the effects thus far observed do not justify that confidence in the remedy which has been inspired by widespread publicity. In our opinion harm may have been done by this undue publicity in so far as it has lessened the confidence of tuberculous persons in well-recognized methods of treatment or interrupted their use, and we are constrained to advise against any lessening of those well-known measures which not only have effected cures, but which have reduced the incidence of the disease.

We are aware that Dr. Friedmann does not wish to be judged scientifically on newspaper statements, and he would undoubtedly disclaim responsibility for certain of those which have appeared. Nevertheless, it is on those that the public bases its opinion until replaced by reliable and unbiased scientific pronouncements supported by convincing data.

In his published address before the Berlin Medical Society Dr. Friedmann stated that the intramuscular injection was the standard or "sovereign" method of administering his treatment, but that it offered some difficulties, which were over

come by the combined or simultaneous intravenous and intramuscular method. The chief difficulty seems to have been that in certain individuals the "normal" local reaction (consisting of the development of an infiltrate from the size of a nut to that of an apple, which becomes gradually resorbed), either fails to develop any palpable induration whatever, or the infiltrate breaks down in the form of a discharging abscess. According to his article the course to pursue seems to be, in the first instance, to repeat injections at long intervals until the development of "hypersusceptibility" causes the formation of an ideal infiltrate, or, in the second instance, to refrain entirely from further treatment for a prolonged period, since "further injections will only subject the patient to more abscesses without doing him any good."

Cases of this kind, therefore, would apparently be in need of treatment, according to Dr. Friedmann's ideas, for a long period of time. In our series of patients, Dr. Friedmann has almost exclusively made use of the intramuscular method alone in pulmonary cases and a very considerable proportion of them have either developed no considerable infiltrate at all or have suffered from abscess formation. It is evident, therefore, that a very considerable proportion of these patients may expect their treatment at the hands of Dr. Friedmann to extend over a prolonged period.

Concerning the culture submitted to us, we may state that a series of experments is under way. The bacillus has been found to be an acid-fast organism, having properties quite different from those of any tubercle bacillus with which we are acquainted. It appears to be identical with an organism cultivated from a few loopfuls of the material used for injection which Dr. Friedmann permitted us to place on culture media in his presence. We requested Dr. Friedmann to furnish us with a larger amount of this material for examination, but this he has declined to do. We can state, however, that living acid-fast bacteria are being injected by the intramuscular and intravenous method, although we are ignorant of what medium they are suspended in or what additional substance or substances may be contained in the final mixture.

JOHN F. ANDERSON,
Chairman of the Board.
A. M. STIMSON,
Recorder.

Correspondence Schools for Nurses.

The idea of correspondence school instruction has had remarkable growth in recent years. For certain subjects, such as history and literature, it may be adequate, although even here it numbers among its disadvantages lack of the stimulus that comes from personal contact with the instructor and class. There are other branches, however, which can never be really taught by correspondence. Nursing, emphatically, is one of these. This is an age of practical methods, and there is no subject to which such methods should be more strictly applied than to that of nursing. A certain amount of theoretical knowledge can be gained from the textbook, such as the location of the different organs of the body and the names and uses of certain drugs—an exceedingly small part of a nurse's training. No one can learn to be a nurse by reading textbooks or lesson sheets, or by hearing descriptions of methods of handling cases. The nurse must learn to recognize conditions by seeing them, to differentiate among symptoms by comparing them and to do by doing—all this not once, but many times. Many of the young women who plan to become nurses do not know these facts. They are led by the alluring advertisements in journals and magazines to take the course which promises to lead easily and cheaply to the desired end. They will be disappointed when they discover, after the completion of their courses with these correspondence schools, that they cannot register their diplomas, that they are not competent to act as nurses, that they will not have the standing of those practically trained, and that the physicians of standing in their communities will refuse to employ or recommend them. And yet the number of correspondence schools for nursing is increasing and the quality decreasing. The methods of some, perhaps, may be regarded as honorable, but there are few of these. The other kind is multiplying. The methods

of one—the Rhode Island College of Nursing—we discussed in a recent issue. Since then physicians who have been consulted by those desiring to take up nursing have written us concerning the National College of Nursing of Elmira, N.Y. This concern seems to have peculiarities of its own. It plans to make use of physicians as an advertising medium, and will do this by appointing physicians as "consultants and medical examiners." The circular letter to doctors says: "For each applicant examined by you and accepted by the school, we shall send you, from the first remittance received, a check for $5 as compensation for your examination or advice. If the applicant originates with you, we shall send you $10." There are other evidences which will compel even the most charitable to believe that such an institution is not conducted in accordance with the highest ideals. It is the duty of physicians to discourage those who contemplate taking a correspondence course in nursing. In the end women so taught will be a disappointment to themselves, an irritation to physicians and a danger to the public.—Journal A. M. A.

Newspapers and Suicide.

A few days ago a Mr. Walker, of Macon, Ga., mistaking it for a headache tablet, swallowed an antiseptic tablet containing 7 grains of bichlorid of mercury. The newspaper announcements said that he vomited soon afterward, and that his stomach was washed out. Hence the probability is that the man retained barely a fatal dose, and, therefore, lived longer than he would have lived had the full amount of mercury taken been retained. This case was not an unusual one. Although such accidents have occurred many times, this case was "featured" by the newspapers of the country day after day, and the idea conveyed that Mr. Walker was having a good time although knowing that he was going to die. Of course the "stories" were embellished to make good reading. As might have been expected, the suggestion has had its effect on despondent waverers, and suicides by this method are now being reported; in fact, before Mr. Walker had died a Chicago paper announced one. It is a pity that the sense of responsibility to the public is so little developed in the editors (or those responsible for the policy) of such papers as those that "featured" the Walker accident. One of our most prominent dailies recently published a cartoon ridiculing the Federal Senate's "Pure News Bill" designed to prevent the publication of unwholesome news. The sensational press is doing its best to hasten the day of such legislation.

Infant Welfare Work in Regina.

One of the great problems with which cities, the world over, have been faced is the high mortality of infants, especially marked during the hot summer months. There are 225,000 avoidable deaths among children under two years of age in the United States every year. This number represents 25 per cent. of all deaths in the registration area of the United States each year.

The question arises why should there be such an appalling mortality of children under two years of age and the answer is lack of proper care and absence of proper food. Children have been denied these two essentials with the result that their vitality is lowered and they fall an easy prey to the grim reaper. The old idea that the death of infants was a wise dispensation of Providence by which the unfit were weeded out and those best fitted to survive were left has been shattered. It has taken us a long time to recognize that if the child has an opportunity to get proper care and proper food it does not become unfit.

At last the general public has been awakened and is beginning to recognize that this slaughter of the innocents is a dark blot on any city's name—a national calamity. Infant Welfare Organizations have sprung up in every country in recent years and the light of a better day has dawned for the children.

To the Health Department the most important phase of Child Welfare work is that of the prevention of unnecessary sickness and deaths among infants. 77 per

cent. of infant deaths from gastro-intestinal, impure air, contagious and other diseases are preventable. The following table showing the causes of preventable deaths in Chicago for the year 1910 is a concrete illustration of this statement:

	Deaths. Under 2 Years.	Estimated Unnecessary Deaths. Per Cent.	Number.
Gastro-intestinal diseases	3,601	95	3,420
Impure air diseases	1,925	75	1,445
Congenital defects and accidents	1,558	50	795
Acute contagious diseases	516	100	516
Tuberculosis (all forms)	155	100	155
Syphilis	116	100	116
Violence	111	50	55
Meningitis	86	25	20
Erysipelas	23	100	23
Tetanus	6	100	6
All other known causes	370	?	...
Totals	8,497	77	6,561

What provision has Regina made for Infant Welfare Work?

Special Milk for Infants.

Arrangements have been practically completed for a Special Milk Supply for the infants of Regina this summer. This milk will come from cows that have been tested and shown to be free from tuberculosis. Every care will be taken to see that the dairy is kept scrupulously clean, that the cattle are clean and healthy, that the attendants are clean and careful, that the milk is properly cooled and kept free from contamination from the time it leaves the dairy until it is delivered. The premises will be closely inspected by the Department and each milk container will bear the official seal of the Department. The aim is to have an absolutely pure milk supply available for the infants of Regina at the lowest possible price.

This milk will be ready for delivery early in May and those who desire to obtain this special milk should notify the Department at once. Infants two years of age and under will have first call. It is vitally important that the infant's milk should be of absolute purity and it is hoped that the public will avail themselves of the efforts of the Department to obtain such a supply.

An Experienced Nurse.

Arrangements have also been made for the appointment of an experienced nurse in Infant Welfare Work who will be available for advice as to the care of infants in any part of the city. It is our aim to reduce the infant mortality of Regina to a minimum and with a pure milk supply and proper care great results can be obtained. It is not necessary to ask for the co-operation of the physicians and mothers in this life-saving work, we know that we shall have it.

A Milk Station.

A milk station will be opened to serve the needs of the city to which babies may be brought for examination and where mothers may be instructed by the nurse as to the preparation of food care of the child, etc. Weekly classes of mothers will be held at which practical talks on infant welfare will be given.